// CHEMICAL INDUSTRIES

VOLUME XXXVI NUMBER 2

"What the Country Needs"

AS INDIVIDUALS we are fast falling into the bad habit of shifting our proper responsibilities to Fate or the Government. Our mistakes are no longer errors of judgment, but the upsetting of sound plans by a great, uncontrollable economic catastrophe. Charity has become a public function because too many unfortunates are in need. It is all very well for a man to tell his wife that the baby's savings account was taken away by the wicked Wall Street manipulators, but that does not change the plain fact that he overstayed a highly speculative market. Cain's cry, "Am I my brother's keeper?" is the first and worst alibi in history.

Likewise our industries find competition beyond control. Big companies fear the small, low-cost producer and little firms rail against price cutting. So they write N. R. A. codes limiting production and fixing prices, and they submit themselves to bureaucratic control hoping to change by law human nature and supply and demand. In the same vein hours and wages are fixed by law, and the Unions strike for collective bargaining but refuse to incorporate, which would fix their legal responsibilities.

As a nation our collective dependence upon others, our lack of courage, our irresponsibility, reaches a climax. We give up the Philippines. We shut up the banks and go off gold. We desert the World Economic Conference. We cancel our mail contracts. We slaughter little pigs and plough under cotton. Even our positive acts are weak or risky makeshifts. We recognize Russia. We hand out doles. We monetize silver. We build up a vast bureaucracy. We create public competition with private enterprise. We borrow more and more with an increasingly unbalanced budget.

And we defend all this defeatism by belittling that "rugged individualism" we so sorely lack.

An Invitation to Our Readers We receive an exceptional number of letters of more than passing interest. Some are sharply critical of us, of the customs and manners of the industry, of big institutions and little men. Others are filled with warm praise of plans and policies and persons which are sometimes not those we admire and commend. Some are constructive; some, destructive. Some are funny; others, sad. A great many of them deserve a better end than a quiet grave in the files.

Their fate in the future will be published in a new department "The Reader Writes:—" This you will find on page 100. It will appear regularly on the second page following the index.

We invite you to contribute to "The Reader Writes:—" and we offer you but one bit of advice. This is just the same as a well known chemical engineer from Niagara Falls gives us on this very page in this issue. For as Rousseau once wrote, "I disagree utterly with what you have said, but I will lay down my life defending your right to say it."

New Products and New Uses It is no state secret that one of the large chemical companies has more than one hundred and thirty new products through the laboratory and the semi-plant stages of development. Some of them are entirely new compounds, others are new to this country, still others are old chemicals produced by a new process; but not one of all these is at present available in the domestic market in commercial quantities. The entire group is now in the hands of the commercial research director.

It is safe to assume that the majority of these "new" chemicals will not be made and merchandized on an industrial scale in the near future. This is not because of carelessness or over-enthusiasm on the part of the technical staff, for not one would have reached its present stage of development had it not held considerable commercial promise. Nevertheless, many do have sufficient distinction of properties or great enough advantage in price to make them successful competitors against existing materials. Their characteristics and costs have been scrupulously tabulated, however, and they are ready when a new use develops. Despite the increasingly exacting demands for all sorts of chemical agents, it still remains true that it is easier to find a new compound than a new market.

Chemistry Marches On Few chemists or chemical executives share in that deadening belief that our technical and scientific progress is responsible for today's economic plight. Not one of either group believes that the cure of our troubles is to stop research in an attempt to check the advances of tomorrow. Such a philosophy is too utterly contrary to our daily experience to have any following from chemical fields.

On the contrary, it is our belief that the tremendous progress during the past century in all mechanical and chemical techniques will be very greatly surpassed by the accomplishments of the coming years. The past century witnessed great triumphs in machines. We look forward to even greater and possibly more sensational developments in new and improved materials. This is the domain of chemistry in industry. We can say truly that "we hold the future's promissory notes."

Economic Control For long ages, as Francis P. Garvan has been pointing out, two parasites, Finance and Government, have fed upon business, sucking a fat living from interest and taxes out of the profits of trade and industry. Of all the real wealth added to the world's store they have always taken toll, and a great deal of history has been written in their struggles and in the constant efforts of merchants and manufacturers to defend the hard-won gains of their enterprise from banker and politician.

Since the Middle Ages, the clutches of Government upon business have been almost continually weakened. For the past couple of centuries the grasp of Finance has become tighter and tighter. In the far future it may be recognized that the great, the fundamental revolution of these distressed times was the transfer of economic control from bank to state.

There is not a doubt but that in many lands strong political machines are being set up that aim not merely to tax industry, but also to direct and compel it. These are disquieting thoughts to disturb our harassed industrialists, but they are worth pondering.

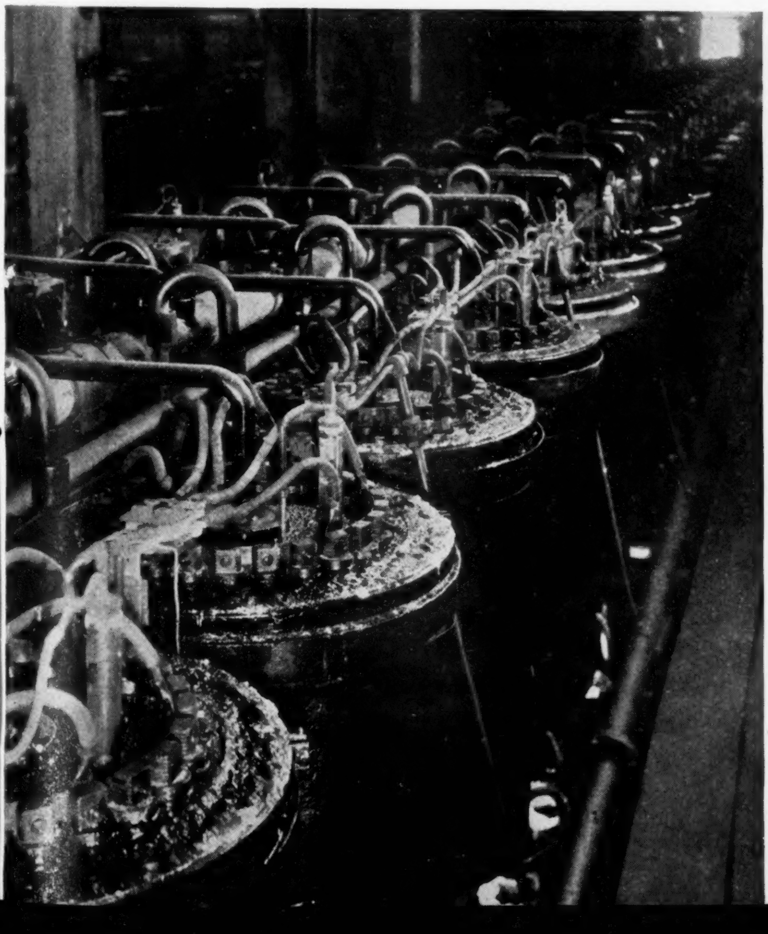
The Chemical Tourist Visits Niagara Falls

Chlorine, Caustic and Company

By Williams Haynes

WHEN our electro-chemical industry was a lusty, boastful youngster, rarin' to go, representatives of the makers of alkali met one bitter February day at the old Iroquois Hotel in Buffalo to discuss a proposed tariff on imported bleaching powder. The business of the meeting completed and train-time still hours off, the assembled delegates sat about gossiping since a nice cold day in Buffalo can imitate Greenland weather too successfully to tempt anyone out-of-doors.

Dr. Dow started it all by stating quite sincerely, but with a touch of honest pride, that improvements in apparatus at Midland had raised the available chlorine in their bleach up to 27 per cent. Max Mauran kicked the ball along by admitting over-modestly that since the product of a mercury cell was obviously so superior, it was smart of Mathieson to have perfected this type and made it work at unbelievable efficiencies. John Bush, of Hooker, now held forth on the wonderful strength, the great length, and the incredible voltage of their new horizontal cell. Ned Bartlett, of Penn Salt, asked if any of them had ever heard about the Irishman who went fishing for bass in the Potomac out of season.



"Well, gentlemen," he continued in his courteous, deliberate Southern manner, "he did!" And as he sat there under the bank casting back and forth, he was hailed from above by a stranger who asked what he was doing.

" 'Fishin' fur bass,' he answered without looking up.

" 'Catching any?'

" 'Nary a fish. It's too cloudy today.'

" 'Ever catch any?'

" 'Sure an' yisterday I caught eleven an' last Toosday I caught nigh twenty.'

" 'Say, I guess you don't know who I am.'

"The Irishman looked up and studied his visitor carefully before he replied. 'Nope, I niver laid an eye on ye.'

" 'Well, I'm the game warden of this county.'

" 'To be shure,' answered Pat, 'an' I've heard till of ye many the times. But I guess you don't know who I am nayther.'

" 'No. Who are you?'

" 'Me? Shure, I'm Pat Sullivan, an' stranger, I'm the biggest damned liar in this same county.' "

There was a dead silence for six long seconds. Then a great roar of laughter shook the room. And the

Above, installation Type S Townsend cells at the Hooker Electrochemical plant. Left, close-up view of Vorce cell room at Electro Bleaching Gas plant.

Left, Colonel Charles F. Vaughn in the research laboratories of Mathieson; and right, William B. ("Bill") Leach, manager of Mathieson's Niagara operations.

moral of Mr. Bartlett's little fable is, that from that time henceforward, when two or three good alkali men get together, they tend strictly to the business in hand, be it writing a code or dealing a poker hand; and they never, never discuss capacity or voltage or purity or any of the sordid details of one of the most highly competitive branches of our chemical industry. Which, by the way, is a very good thing indeed for the peace and prosperity of the delightful Niagara Club, which at Niagara Falls is the center of masculine sociability of the electro-chemical headquarters of the country.

At this Niagara Club where, as a background for most jolly and friendly chemical gatherings, they serve very superior beefsteak dinners with dry sherry from Portugal and cold Canadian ale, you will meet alkali operating executives who have lived ten, fifteen, twenty years within the sound of the roar of that "vast and prodigious cadence of water" about which are now grouped the greatest collection of electro-chemical operations in the world, and who have never been in more than one, single electrolytic alkali plant. They put to shame even the New Yorker who has never visited the Statue of Liberty. But their reasons are certainly not laziness or indifference!

At Niagara Falls are five electrolytic alkali plants. Each operates a different type of cell, to say nothing of the R & H plant of the du Ponts using fused salt to produce chlorine and metallic sodium. Here then is a regular electrolytic clinic. Mathieson is using their own adaptation of the original Castner mercury cell; Niagara Alkali replaced their former installation of German Billiters with Vorce cells about five years ago; Niagara Smelting has Wheeler cells, somewhat akin to Vorce and like them stemming off from the Gibbs cell; Isco has Allen-Moore; and Hooker is using their own improved form of the horizontal Townsend cell. Under the circumstances a truce on curiosity becomes almost a necessity, for the liveliest rivalry of opinion exists as to comparative efficiency.

Everybody knows the principle upon which the other fellow's cell works, its theoretical power consumption and chlorine capacity. But then everyone has his own little set of pet operating tricks and equipment gadgets, and nobody can be quite sure how much he may dare discount the "know how" of his neighbors. Hence the Armistice. Visiting during working hours is not a fashionable pastime and gossips are not popular at Niagara Falls.

Customer Interest in Niagara Plants

Throughout all the alkali plants at Niagara two things are noticeable. The first is the keen customer consciousness of the managers and the research workers. The second is the carefully thought out programs of vertical expansion into new products which are being carried forward.

Time was—and not so long since—when a customer meant little more to a chemical plant executive than a name on a shipping tag. What he did with the chemicals shipped to him, nobody cared. If he did not like the shipment—well, that was the salesman's business. But that time has gone. There is now the greatest interest at the plants in the buyers of its products. Questions about old markets and new uses, grades for this and substitutes for that, were bombarded at me; and time and again I was proudly shown new apparatus to produce a certain material for a special use, new shipping containers to please a certain kind of trade; new research work afoot to solve the particular problems of some consuming industry.

From the simple electrolysis of salt in water to yield chlorine, caustic soda, and hydrogen, there has been a notable diversification of products, chiefly, of course, those products from or by means of chlorine. The logic is unassailable as by this means greater stability is assured for the operation and the margin of profit is increased. Without doubt this branching out has been important in the development of all sorts of new and

interesting chlorine products which have in turn increased the consumption of this versatile yellow gas.

In the Fall of 1897, the first of the Niagara Falls electro-chemical plants opened, when the current was turned through the first battery of electrolytic chlorine cells at the Mathieson Alkali Works, and it is quite proper to begin with that pioneer, especially since they have played so important a part in the entire development of the industry. Their original plant owed much to the chemical engineering skill of Castner who, though he died young, made a very great contribution in the earliest days of electrolytic chemical technique. The story of these exciting-discouraging days was told us at lunch by Colonel Charles F. Vaughn who has grown up with this great Mathieson plant and who is now in charge of the research and development work in the laboratories of these Niagara Falls works. His corps of researchers, working on a score of different problems, are real front line troops, for the slim, trim Colonel is an energetic enthusiast on any kind of a problem involving a new process, or a new use, or a new product. These research activities are focused sharply upon the work of developing new uses for Mathieson products, and new items built with sound chemical logic upon their existing products and in line with their general alkali business.

These laboratory activities are not, however, the only new developments afoot, and the big, business-like manager of Mathieson's Niagara operations, William B. Leach, with F. V. Butler, Superintendent, and E. C. Curtis, Assistant Superintendent, explained how they

Checking the weight of a chlorine gas cylinder at the Electro Bleaching Gas plant.

have gradually, and in accordance with a carefully worked out plan, built up virtually a new plant since 1926, based upon the curtailment of the production of bleach and the development of their large synthetic ammonia plant, employing the hydrogen from the electrolytic cells which before that time had simply gone to waste. As a part of this program of expansion and development there have recently been an addition to the transformer room, a new pipe-line connecting the two units of the plant, a new chlorine drying unit, and a revamping and enlargement of the machine shop.

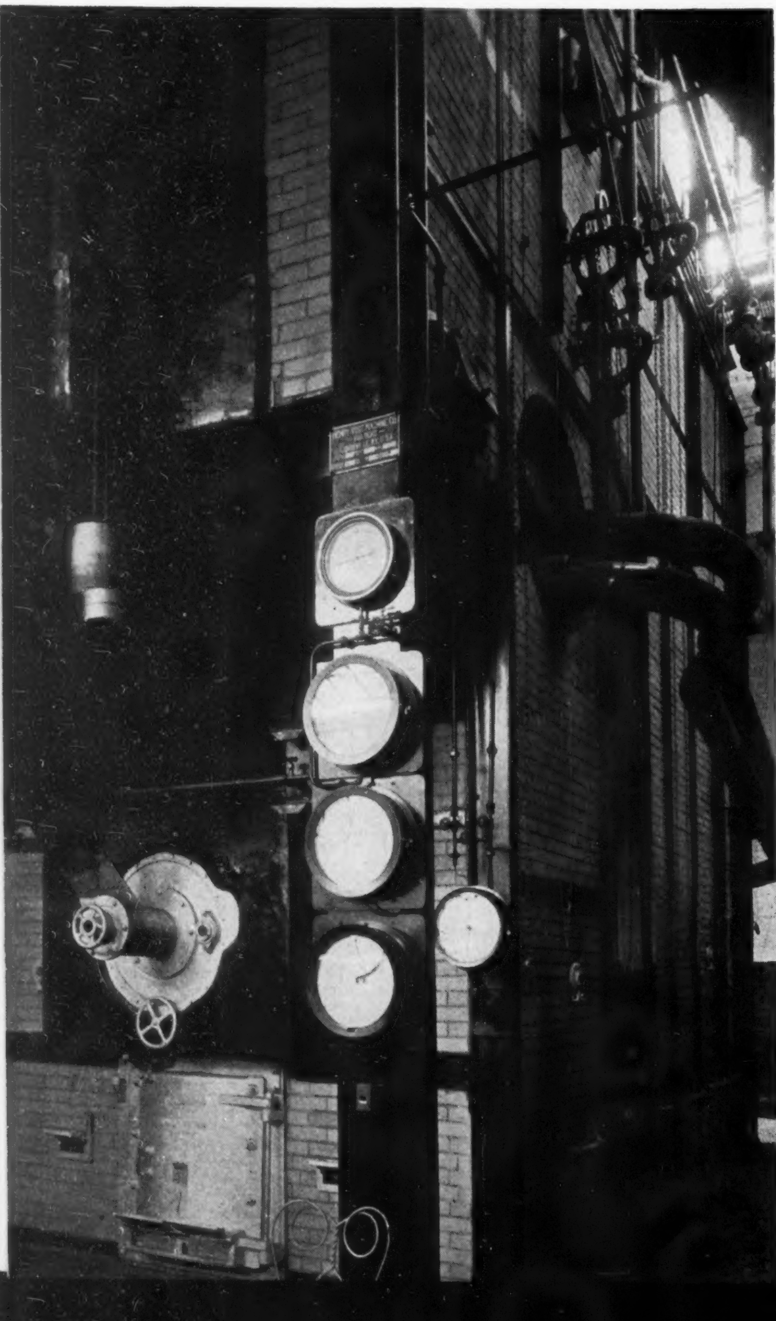
Paul Braillier, general superintendent, of the plant of the Niagara Smelting Company, standing in front of the plant.

A nearby neighbor of Mathieson's and a fellow Niagara pioneer is the joint plant of the Electro Bleaching Gas-Niagara Alkali Companies; the latter company is the direct successor of the old Roberts Chemical Company, which in 1898 began making caustic and chlorine. It was in 1907 that the Electro Bleaching Gas Company began buying chlorine from them and liquefying it, the two companies becoming affiliated in 1915. While they do not produce a formidable list of chemicals—liquid chlorine, caustic soda, caustic potash, carbonate of potash, bleaching powder, orthodichlorobenzene, paradichlorobenzene, and muriatic acid—these companies were the real American pioneers in two important items—liquid chlorine and caustic potash.

Since 1888, in Germany, liquid chlorine has been an article of chemical commerce; but at that time in America bleaching powder was the standard bleach and water purifier and general purpose disinfectant. When in 1906 E. D. Kingsley organized the Electro Bleaching Gas Co. and with two imported compressors began liquefying chlorine, many of its present-day uses were either not practiced in the United States (as dye-making or organic synthesis) or were unknown (as chlorinated solvents, rubber, etc.). On September 22, 1909, from Niagara Falls, six tiny one hundred pound cylinders were shipped—the first commercial delivery of liquid chlorine in this country—to a customer who paid 25c a pound. Today that same liquid chlorine is regularly shipped in 30,000 lb. tank cars and sold at a twelfth of that initial price. In due and proper proportions, that pioneer plant, which is now under the capable superintendence of James C. Cassidy, vice-president in charge of production, has been enlarged and modernized till the present laboratory-office building is now larger than the whole original works.

Up at the end of the long avenue that parallels the river, where the Niagara and the Mathieson plants are, is the plant of the Hooker Electrochemical Company. At the Hooker plant diversification, chiefly of chlorine products, has been carried forward to a total of over forty items. A. H. Hooker, Sr., summed up the philosophy of the operation by saying, "Big, cheap blocks of power tied up with the western New York salt deposits and close to the biggest chemical consuming markets of the country, that is the secret of the plants here." Tall, curiously like King George V in looks, this veteran chemical technical director has an apt way of putting his thoughts into words. "Part of our research now is advance sales service. Chlorine in the industries means bleaching, so we study all sorts of ways of bleaching all sorts of materials. Caustic is not so simple, for it has so many uses; but we are always searching, searching for just the right grade, just the best strength, for use in making rayon, soap, and what not."

The heart of the model power plant at Isco.



I missed E. R. Bartlett, vice-president and works manager of both the Niagara and Tacoma plants, who was away on a business trip. We are seated about a great oak table in the plant conference room with R. L. Murray, who is chief engineer in charge of development work; Bjarne Klaussen, the plant superintendent, and J. H. Babcock, the research manager. Lindley Murray (you remember he used to play championship tennis) grinned cheerfully across at Mr. Babcock and added, "Yes, and another part of our research is building up new products."

"Let's go and see," suggested "A.H.", and out we stepped for a tour through the plant and the laboratories.

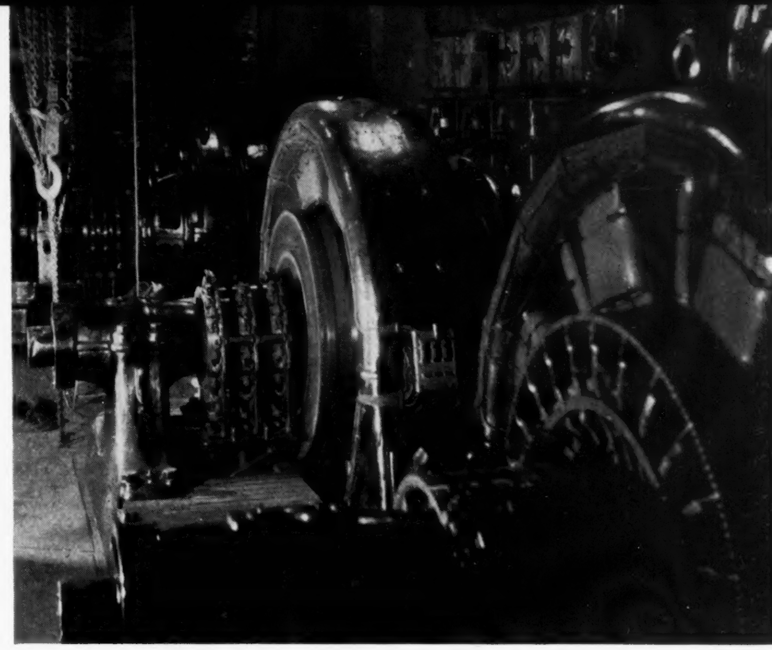
Most impressive, no doubt, is the complete replacement of the high tension electrical switching equipment. The big guns of a battleship, the penstocks of a modern hydroelectric plant, a great farm of oil tanks, these, each in their own way, stamp the mind with the size of modern industry; but the big black panels with their row upon row of copper switches and shining meters, their mazy multitude of perfectly ordered wiring, bring home a subtle but sure feeling of awesome power. But from a chemical point of view, there is much more of interest in the new chlorine refrigerating equipment and the new nickel-lined caustic evaporators. This last apparatus is in a great building—the starting point of the Hooker manufacturing diversification—which might very well serve as a practical demonstration for all students of chemical engineering in the unit operations of the industry. For here are carried on as a regular part of the workaday operations, distillation, evaporation, chlorination, filtering, drying, compressing, and what not. Over and above the new electrical and chemical equipment, the Hooker plant has within the year been fitted with a complete new set of chlorine gas lines from cells to compressors and new chlorine storage tanks with the sizable capacity of 50 tons each.

The Research Laboratories were undergoing a complete overhauling and rejuvenation and were alive with activity and each department dealing with the many diversified products included equipment of almost every description. The whole plant was as neat and orderly as a battleship and gave every evidence of being well maintained.

The two remaining alkali plants at Niagara Falls were built during the war. 'Way off by itself, below the Falls and beyond the impressive gray buildings of the old Jesuit college, is the Niagara Smelting Company, a misnomer certainly for a chlorine-caustic operation, until you remember that it was organized by an energetic Milwaukean, V. M. Weaver, who set out to produce aluminum by the electrolysis of aluminum chloride, produced in turn by the chlorination of bauxite. Difficulties in the chlorination furnace proved insurmountable, and the plant turned to the manufacture of silicon and titanium tetrachlorides for smoke screens. In 1918 an output of these chemicals of over 300 tons each was achieved, and at the request of the Government the manufacture of sulfur chloride, for war gas at Edgewood, was undertaken. The Armistice left

the company high and dry with products whose chief use was as munitions; but the manufacture of a solution of calcium hypochlorite for the nearby paper mills furnished the opportunity to reconstruct the enterprise into an electrolytic plant. The production of carbon tetrachloride by direct chlorination of carbon bisulfide enabled them to create a specialty, a material which they can guarantee to contain less than .01 per cent. of carbon bisulfide.

In 1922 the shrewd and ubiquitous John Stauffer visited this plant and after four years of patient bargaining he took over a controlling interest. Paul Braillier, manager, is justly proud of his compact and economical operation; of his neat disposal of wastes and by-products; of his operating crew, which includes a full-blooded Seneca Indian; and of his safety record. "We may not be a big frog in the Niagara pond," was how he put it, "but we are independent and self-contained, and we are very happy."

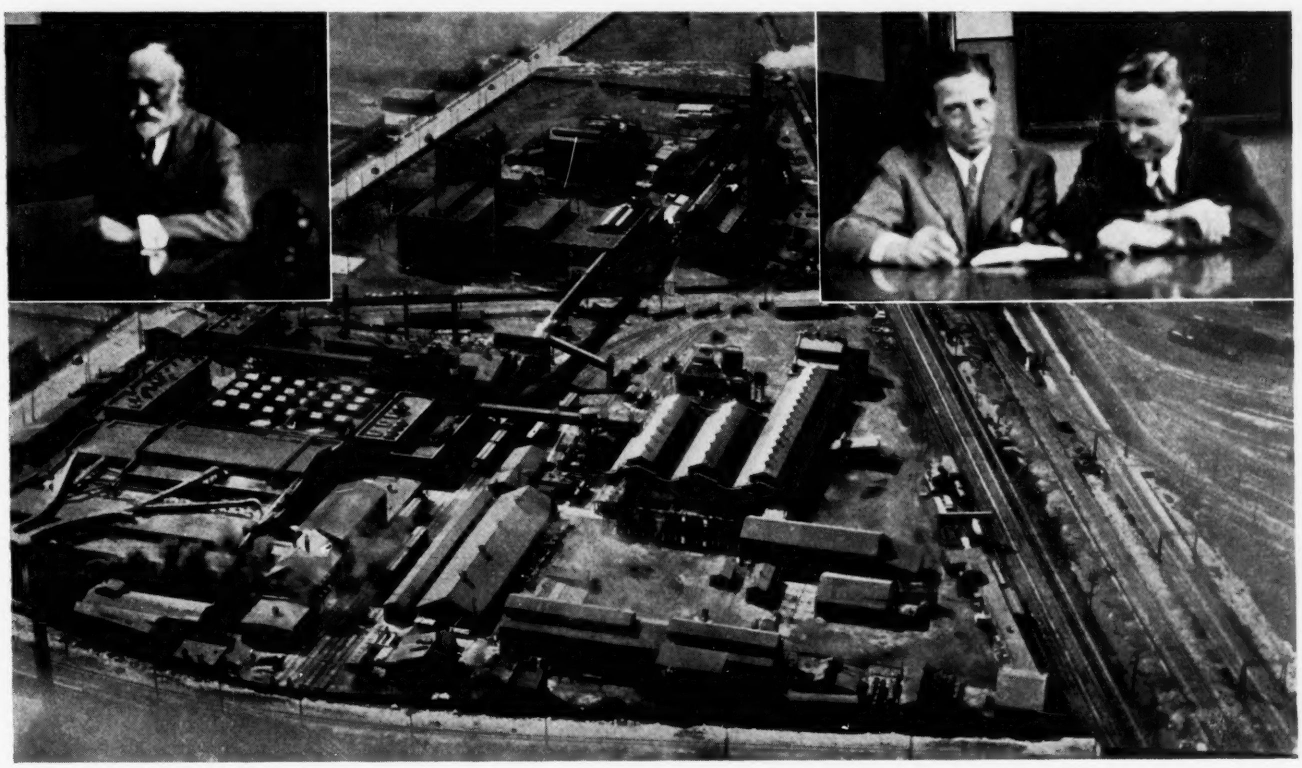


Electric generators in Niagara Alkali.

That wholesome pride which is a good operating staff's hallmark, breaks out in many different forms. Over at Isco the apple of Dr. E. T. Ladd's eye is his new power plant. In persuading him to stand still for a snapshot, I assured him that our readers like to see what the chemical men whom they know by name really look like. As we were parting he admonished me earnestly, "About those photographs now—don't you fail to use one of those of the boilers. If there isn't room just leave out my picture. That's not really important; but the power plant is really something to show."

His pride is justified. All over Niagara Falls I had been told that the Isco costs of a pound of steam were so low and the Isco boiler efficiencies so high that this Isco power plant appeared to be a sort of local industrial deity, worshipped by its neighbors with envious idolatry. It deserves to be.

It is a 400 h. p. unit, burning powdered coal, fired from the rear, fed primary air pre-heated in the coolers of the sides and floor and secondary air from room top, so that about 70 per cent. of the waste heat is picked up. It has cut down the coal consumption, as against the old installation, of from 22 tons at $1.25 per ton to 13 tons at 50c; and it operates at 92 per cent. gross efficiency. It mills the coal so finely that there is



Airplane view of the Hooker Electrochemical works. Upper left, A. H. Hooker; at the right, Bjarne Klaussen, plant superintendent, and R. Lindley Murray, chief engineer in charge of development work.

Above, Eben C. Speiden, manager, Isco Chemical Company; below, Dr. E. T. Ladd, who assured the writer he felt it was more important to show a photograph of the boilers rather than that of a chemical technical man.

practically no ash, and as the flue-gases are baffled to catch the heavy fly ash for reburning, the ashes problem is down to about three cans a fuel day. The installation is fitted with every possible, practical automatic control—coal feed and fans, both induced and direct; continuous water level recorder; 100 lbs. pressure with damper regulator: all correlated for maximum efficiency at different steam demands. There is a special gauge to indicate the pull on the stack and in the combustion chamber; and neatest of all, a super-safety device, a photo-electric eye, which, if the flame in the furnace goes out, sounds a raucous alarm and shuts off the feed and fans, all of which must be properly reset before the flame can be relighted. This latest control, making for safe operation, is the original idea of Dr. Ladd, for which a patent has been applied.

The Isco plant was a war-built adjunct to the Innis-Speiden sales organization, to give them chemicals the supply of which was curtailed, or even cut off, by hostilities. The initial products were caustic soda and bleaching powder to which, at the Government's behest, carbon tetrachloride was soon added. In 1918 caustic potash (made at that time from potash from kelp) was produced and shortly afterwards from potassium chloride. Since the war the enterprise has been projected along two chemical lines—potash salts and various chlorides. For example, sulfur and ferric chloride have long been leaders in this line, and chlorpicrin, used as a fumigant and insecticide, has been made for several years. The latest addition is carbonate of potash, formerly imported in the hydrated or calcined form, and now produced in the liquid (47-48 per cent.) and calcined grades. Isco's neighbor, Niagara Alkali has also recently added potassium carbonate to its products, offering the liquid and the hydrated forms.

In his bright, sunny office in a corner of the neat brick office building, just across the street from the new laboratories of Union Carbide, Eben Speiden, who came up to Niagara when the plant was building and stayed on in charge of the operation, emphasized that their activities are directed towards giving their sales forces material to sell. "When you think of it," he mused, thoughtfully puffing at his briar pipe, "the difference between producing to sell and selling to keep a plant running is really fundamental. It gives you quite a different approach to a production program and it radically modifies your ideas about developments and expansions. For one hundred and nineteen years our company has been essentially a chemical selling group, and this plant was logically erected during the war to supply chemicals we could not then import. Ever since we have religiously kept to that idea, holding our manufacturing schedule down to a closely related group of products and making only enough of these to fill the orders of our own customers. It is not the most aggressive chemical manufacturing," he added with a quiet smile, "but you may be sure that it is certainly a very comfortable and constructive ideal. The fact that we are now building a new plant for the larger production of carbonate of potash, is evidence, I take it, that we are neither cowardly nor unprogressive. A growing market and the difficulties of foreign exchange are quite sufficient reason for our embarking upon this enterprise."

View of Isco Chemical works taken from roof of new laboratory of the Carbide and Carbon Chemicals Corp.

This same sort of commercial courage and chemical alertness is the common characteristic of all the Niagara Falls alkali plants. Throughout the depression they have kept the employment and wage-scale records of the city far, far above the New York State average. Today new buildings are going up on practically every company's property, and there is not a research laboratory in the industry that has not new products waiting for plant-scale production.

The Cost of a Code—

N. R. A. Assets and Liabilities of the Fertilizer Industry

CANVASS a representative gathering of fertilizer executives, as at the recent convention or a zone meeting, and you will get vociferous endorsement of the Code and all its works. Sit down quietly with one of these same fertilizer industrialists, in his own office or over a luncheon table, and whether he is a big or a little manufacturer or a dry mixer, you will promptly discover that he is troubled with secret misgivings.

The flow of fertilizer trade is never a clear, smooth stream. There are always whirlpools and eddies, and periodically much muddy water is stirred up. For the fertilizer industry has important factors whose interests are often at cross purposes.

On the one side are big manufacturers who produce superphosphate, acidulating rock; mixing this ingredient with the other fertilizer materials essential in a complete mixed fertilizer, operating a number of plants, maintaining virtually a nation-wide sales organization. At the other end are about six hundred dry mixers who purchase all their fertilizer materials (their superphosphate from their bigger competitors) and who, with little plant investment, overhead, and selling expense, concentrate their efforts in a restricted territory. In between are the medium-sized manufacturers, operating one or more plants, and acidulating rock which they purchase. On the side, are the farmers' cooperative organizations, some of which are purchasing fertilizer materials in bulk and mixing for their members.

Every bit as confused as this manufacturing situation is the marketing system. Fertilizer manufacturers, large and small, not only maintain their own sales forces, but they also sell through so-called agents who may range all the way from some aggressive farmer to the local undertaker. They also distribute through cotton-gins in the South and grain elevators in the Mid-West, through general merchants, feed and seed stores, hardware stores, grocery stores, drug stores, implement dealers and what not, and also through the cooperatives. All sorts of terms, conditions, and commissions, have been made among this jumble of distributing agencies who, while they have aggressively pushed the sale of fertilizers, have, on many occasions, pulled down the price structure. The distributors' contracts have usually contained price protection so that, at the end of the season, if the price breaks, an agent will make one small purchase from some other manufacturer and then go back to his own principal with a demand for a rebate on the basis of the lowest price which he has been able to shop in a distressed market.

Upon several occasions strenuous efforts have been made to straighten out the fertilizer situation. In 1925, for example, a Code of Fair Trade Practice was established, and for a year was so well adhered to that the price structure being much improved, the fertilizer manufacturers were able to make one of their not-too-common profitable seasons. But the result was to stimulate over-production the following year, and out of the window went the ethical practices set up with such pain and labor.

The plight of the American farmer, during the past few years, has much curtailed the fertilizer demand which intensifies the fertilizer difficulties, so that the end of the season has come to mean price cutting and the net result a stack of fertilizer notes, an iceberg of assets.

Here, if ever, was an industry to which a code of fair practice with some reasonable control over price competition ought to prove a god-send. The fertilizer industry saw this opportunity and grasped it firmly. They wrote a code banning the secret rebates, unreasonable discounts, unfair allowances for advertising and delivery charges. They made mandatory the announcement of an open price schedule with pre-determined discounts on quantity orders which, once published, could not be changed inside of ten days, and then only after notice had been mailed to all members of the industry. The most elaborate code administrative machinery in all chemical fields was set up. The country has been cut into a dozen zones with zone committees, while the facilities of the well organized National Fertilizer Association were extended and turned over very largely to code administration work.

The first result was that the budget of the NFA which in 1932-33 was $62,545 was raised in 1934 to $160,370, of which $100,000 was for code work. The

current budget reaches the sizable total of $304,754, distributed as follows:

Regular association work	$ 54,825
Code work	219,929
Zone code work	30,000

The appropriations have always been raised as an assessment upon the output of the active members. In 1931-32 this was three-quarters of a cent per ton of either bag or bulk fertilizer, and a quarter of a cent per ton on superphosphate and rock. It has been raised to 5c a ton on finished fertilizers in bag or bulk; 2½c a ton on superphosphate, and 1¼c on phosphate rock.

Over and above this direct code tax, half a dozen guesses at the total expenditures of the individual companies for attending meetings, handling the details of the open price announcement system, etc., cluster about the figure of one million dollars a year. This represents an additional tax of something like 15c a ton on the 6,000,000 tons of fertilizers of the past season.

What is the industry getting for this investment?

Almost unanimously the opinion is that the experiment, insofar as cleaner competition and more stable prices are concerned, is well worth the cost. Some doubt is voiced as to how long an effective control of competition can be maintained under the Code, but many fertilizer men hope that a couple of years of decent business at fair prices will be an extremely wholesome lesson. As one man put it, "the taste of clean competition, which the Code has given us, is worth all of the time and money we have spent in NRA activities."

What Results from the Code?

But while all agree that the Code has improved competition and steadied prices, there is, at the same time, a growing recognition that the situation created by the Code affects markedly basic conditions in the fertilizer industry. At this point the unanimity of the industry's important leaders vanishes. Based on the position of each man's company most marked differences of opinion arise. But all admit that two significant—some consider them sinister—results are arising out of the Code.

During the past year there has been an increase of over one hundred small, local dry mixing operations. The Farm Bureaus and other cooperative organizations have been tremendously aided and abetted.

As the larger fertilizer manufacturer sees the Code, it is a pretty umbrella held over the dry mixer. This aggravates what to him seems one of the ancient evils of the industry.

"A fertilizer mixing plant in every county in every fertilizer consuming area—that's the logical outcome" as seen by a sales executive of one of the larger fertilizer companies. On the other hand, the growth of dry mixing has been steady, for both economic and financial forces have been working in this direction. Accordingly, many of the larger companies are inclined to view the present situation rather philosophically. They feel that this is but an acceleration of a perfectly natural development, while the older dry mixers view the newcomers jealously as interlopers. No doubt but that the NRA program has thrown a protecting arm against keen competition and price cutting around the mixers. Moreover, a number of fertilizer dealers find that the small differentials on quantity discounts in a fixed price market practically freeze them out. In many instances their best customers can purchase in ton lots as cheap as they can in larger quantities, and now no opportunity exists for beating down the producers' prices for an extra discount to themselves. Hence many dealers are tempted to qualify as producers when they come under the Code and pay Code wages.

In this they are encouraged by energetic mixing equipment manufacturers who are beating the highways and byways for prospects. The Atlanta Utility Works, for example, are pushing an active campaign, selling five-ton plants for $1,500. For as little as $250 (one-third cash, two-thirds on terms) the Carolina Mixing Company will install a barrel outfit with a capacity of a hundred pound batch mix in half a minute.

Cooperatives Thrive under Code Regulations

Throughout the entire industry the aid and comfort given to the cooperatives is considered the most serious adverse affect of code regulation. While specifically forbidding all forms of price cutting and rebate, the Fertilizer Code provides—"nothing in this Section shall be construed or applied to prohibit the distribution of dividends from earned income or the payment of dividends on a patronage basis, to any member of a cooperative organization of producers." It is furthermore pointed out that these cooperative associations pay no income tax, that they receive very direct assistance in their sales from county agents and other officials, that the Government lends them money to finance their operations upon very low rates of interest; and thus they are placed in so favorable a position that it threatens the very business life of the independent dealers in farm supplies.

These independent dealers are the backbone of the country merchant trade; a group of hard working men, located at the crossroads all over the land, who have well and faithfully served the farm community. They have filled the needs for calico; for mother's dress, and paregoric for the baby. They have acted as commission merchants, enabling many families to make "pin money" out of butter, and eggs, and vegetables. Their service cannot be gauged, but anyone who has lived in a farming community knows how much convenience and comfort and safety they have contributed to rural life; and how much they have helped in the upbuilding of our agricultural economics. The life of these independent merchants is threatened by the farm cooperatives selling seeds, feeds, farm machinery, and fertilizers; breaking what has been the backbone of the country merchant's trade, leaving him with a seriously curtailed volume of business to sell the perishables and the fancy goods and the slow moving items which the local store has always carried.

L. R. Rumsyre, the manager of the Farmers Elevator Company, South Whitely, Indiana, goaded by the injustice of this situation, wrote to the Secretary of Agriculture last Fall, and the following extracts from his letter sum up the position of the independent fertilizer distributor vividly:

"Perhaps one concrete example will best illustrate how the Farm Bureau rebate plan works. When the wheat buying season opened up the Farm Bureau circulated a letter which by innuendo created the impression that the $3.60 per ton margin established by the Code Authority on fertilizers was excessive. It was then pointed out that a substantial part of this $3.60 would be returned if the user purchased his fertilizer through the Farm Bureau. Meetings were held and solicitors were sent out to contract orders upon this basis. At the same time, it was explained that our independent dealers are forbidden by the Code to make such rebates.

"This, of course, is true. Under code regulations an independent dealer, a taxpayer, dare not even offer a cigar to a customer to secure an order, yet the Farm Bureau, a tax evader, is taken care of by the Code. . . . The continued development of this tax exempt and rebate giving plan can mean but one thing to privately owned business, and since it appears to enjoy the special care and favor of the Administration, independent dealers wonder if their ruin is contemplated or desired."

The Government's answer to this citizen was:

"Let me thank you for your interesting letter about the methods followed by the Farm Bureau. This letter has been shown to several persons here. THE PREVAILING OPINION IS THAT COOPERATIVE BUSINESS IS RESTRICTED AND THAT YOU ARE IN A POSITION SIMILAR TO THAT OF OTHER BUSINESS MEN AS A RESULT OF AN EVOLUTION IN BUSINESS ORGANIZATION AND METHODS. You will be able to judge best whether NRA code restrictions have been violated, and whether your code directors should be informed." This ultimatum was signed by H. W. Hockbaun, in charge of the Eastern Section, the Division of Cooperative Extension, United States Department of Agriculture, under date of October 4, 1934.

Copies of this correspondence illuminated by some blistering paragraphs of caustic comment have been broadcast by Mr. Rumsyre. Like the poor little pants presser in New Jersey and the iceplant in Florida, like Francis P. Garvan's open letter to Ezekiel Mordecai about the development of the wood pulp industry in the South, like the newspaper publishers' fight for a free and independent press, this exchange of letters has aroused many executives to an appreciation of the true meaning of some ultimate costs of the Fertilizer Code. The uncomfortable feeling grows that for the penny-wise policy of a stable market throughout the past and possibly throughout the coming fertilizer season, the industry is pound foolish in building up those very forces which have been most disruptive of honest competition and most destructive of good business. Summing up this feeling, a man who is the chief executive in his own company and who has long been one of the leaders in the councils of the National Fertilizer Association, recently said: "If any industry has more habitually indulged in foolish mistakes, than the manufacturers of fertilizers, I have yet to hear tell of them. We have been wrong in our manufacturing policies. At least once in three years we make grievous mistakes in our production programs. Our marketing system seems to have been designed by a pack of lunatics. We have wasted hundreds of thousands of dollars trying to do the educational work that the county agents are paid to do, and we have lost hundreds of thousands of dollars trying to play banker for the American farmer. It is a sorry, silly record of industrial blundering. On the face of it, the better competitive conditions and the firmer prices established by the Code appear to be a great advantage to the whole industry, and yet looking at it coolly and broadly most responsible executives of the industry must feel that we are committing our old and favorite error of grabbing at an immediate advantage to our ultimate loss."

Industry's Bookshelf

The Science of Rubber ("Handbuch der Kautschukwissenschaft"), by Prof. Dipl.-Ing K. Memmler, English translation by R. F. Dunbrook and V. N. Morris, 770 pages. Reinhold Publishing Corp., 330 W. 42 st., N. Y. City. $15.

American and British chemists will, undoubtedly, welcome the translation of this outstanding German work on latex, crude rubber, chemistry of rubber, vulcanization, analysis of rubber, microscopy and pigment dispersion, physics of rubber and recently developed, specialized equipment for physical testing. Certain features and additions have been made that increase still further the book's usefulness as a first class reference book.

The Design and Construction of High Pressure Chemical Plant, by Harold Tongue, 420 pages. D. Van Nostrand Co. $12.

Although much has been written on the subject of high pressures in chemical operations, very little has been published on the subject of design and construction of such equipment. And so this authoritative compilation of data, expertly collected and edited, much of it from the author's own personal experiences, is of very special value.

Arsenical and Argentiferous Copper, by J. L. Gregg, 189 pages. Chemical Catalog Co., N. Y. City. $4.

This is another volume in the American Chemical Society Monographs and was prepared at the Battelle Memorial Institute. Not alone are the properties gone into in great detail but their relation to the metal itself is clearly and comprehensively shown.

Alloys of Iron and Copper, by Frank T. Sisco, 454 pages. McGraw-Hill Book Co., N. Y. City. $5.

This is the 4th in the series of Alloys of Iron Research, Monograph Series of the Engineering Foundation to be completed. These monographs are a concise but comprehensive critical summary of research on ferrous alloys as reported in the technical literature of the world.

Budget Control

By V. R. Bechtel

Budget Director, American Cyanamid Company

II

Preparation of the Budgets

ESTIMATES of sales are naturally the starting basis for the budget. Estimates of volume and sales prices are prepared by each sales division detailed by major products, by shipping points, by grades, packings, etc. The volume estimates become the basis for preparing the manufacturing budget also by plants, products, grades, packings, etc. Consideration is given to the estimated inventory on hand at the beginning and end of the budget period.

Detailed cost estimates are prepared and a cross section analysis made to determine the elements of cost such as payroll, raw materials, purchased or manufactured services, fixed overhead, etc., by items. The Payroll Analysis is used as a general guide in planning the personnel of the plant. The raw material analysis by items is used as a general guide to the purchasing and stock keeping departments in planning the purchasing program, particularly that part which must be provided under long term contracts. The value of all items is used as a basis for preparing the cash budget schedules.

From the manufacturing and sales budgets, a schedule is prepared setting up in detail the estimate of sales, cost of sales and gross profit by products showing volume, selling value, cost of sales also gross profit in dollar and unit value. Cost of sales reflects (in accord with the accounting practice) exhaustion of inventories on an average cost basis or on the basis of exhausting the older purchases first.

Description of Forms and Procedure Used

As previously stated the budget is set up as nearly as possible parallel with the accounts. To accomplish this purpose, to provide detail budget schedules for each operation on which a detail account schedule is prepared, and to follow through the computation of the operating and cash budgets on a logical and accurate basis, several separate budget forms are required. These forms are printed and ruled to fit the needs and except the schedule for Sales, Cost of Sales and Gross Profit Analysis, are standard 11″ x 17″ in size, perforated on the end to permit filing and with typewriter spacing. The more important of these schedules, with a brief title explanation and with sample exhibits (all figures are fictitious but have been made to tie in with a complete set of schedules to better illustrate their function) are as follows:

Main Schedules

1. No. "A": Cash summary reconciling income schedule No. "C" with cash receipts and disbursements, Schedule "B". Shows anticipated balance sheet changes by control accounts. In principle, this schedule takes the place, in a simplified form, of a Balance Sheet Budget. Fig. 1.

2. No. "B": Cash Receipts and Disbursements schedule and cash balances. Shows the amount of receipts and disbursements by major control accounts. Fig. 2.

3. No. "C": Income account from sales to net income. Fig. 3.

4. Nos. 301-371: Detail of sales, cost of sales and gross profit schedule supporting net income and showing major products in volume, by plants, dollar and unit value for sales, cost of sales and gross profit.

5. Manufacturing Cost Budget for each major product, supporting cost of sales schedule and detailing the cost to produce based on the volume required to meet sales and inventory requirements. Fig. 4.

6. A blanket schedule used for all departmental budgets such as plant general expense, expense of operating departments in the plants and for departments such as selling, administrative, etc., detailed by items of expense. Used to support manufacturing costs and overhead departments in the Income Account. This is the most commonly used schedule; is also used for computing depreciation, showing value of assets at beginning of budget period, summarized by classes of assets, with depreciation rates and amounts of depreciation computed which is distributed on the schedule by departments chargeable. Fig. 5.

7. No. 16: Schedule of Construction Job Orders separated as between jobs approved and under way and for jobs under consideration for the budget period but not yet presented for specific approval. Set up to show a brief description of each job, the job number, total authorized (or required), amount

A CHEMICAL Co.

CASH BUDGET—FISCAL YEAR 1934

SCHEDULE RECONCILING NET INCOME SCHEDULE "C" WITH CASH RECEIPTS & DISBURSEMENTS SCHEDULE "B" SHOWING BALANCE SHEET CHANGES

NO. A

DESCRIPTION	LINE NO.	SCHED NO.	ACTUAL PRIOR FISCAL YEAR	EST. CURRENT FISCAL YEAR	MONTH OF JAN. 1934	MONTH OF FEB. 1934	MONTH OF MAR. 1934	3 MOS. ENDING MAR. 31 1934	MONTH OF APR. 1934	MONTH OF MAY 1934	MONTH OF JUNE 1934	3 MOS. ENDING JUNE 30 1934	6 MOS. ENDING JUNE 30 1934	6 MOS. ENDING DEC. 31 1934
EST. NET INCOME FOR PERIOD (L52)	1	"C"	$ 111,139	$ 119,204	$ 8,647	$ 7,116	$ 10,990	$ 26,753	$ 7,590	$ 11,010	$ 9,488	$ 28,088	$ 54,841	$ 64,363
	2													
ADD: AMOUNTS CHARGED TO NET INCOME	3													
NOT AFFECTING CASH DURING PERIOD	4													
RES. FOR DEPR., DEP'L & OBSOLESCENCE	5	18	8,670	9,700	754	779	779	2,312	804	829	829	2,462	4,774	4,926
" " DOUBTFUL ACCOUNTS (NET)	6	08	2,038	2,017	479	460	493	1,432	470	515	490	1,475	2,907	890
" " PROBABLE INV. ADJS. (NET)	7	09												
" " OFF SEASON EXP. & REP. (NET)	8	43												
" " UNREALIZED INTER-CO. PFT. (NET)	9	45												
" " CONTINGENCIES (NET)	10	46	2,400	2,400	200	200	200	600	200	200	200	600	1,200	1,200
	11													
	12													
	13													
	14													
EST. RESULTS FROM OPERATIONS	15													
REALIZABLE IN CASH	16		124,247	133,321	10,080	8,555	12,462	31,097	9,064	12,554	11,007	32,625	63,732	69,599
	17													
ADD OR DED. EST. CHANGES IN BAL. SHEET	18													
AF. CASH (INC. IN CASH—BLK.—DEC. RED)	19													
	20													
	21													
SECURITIES, TRADE NOTES & ACCTS. REC. &	22													
ACCT. REC. OTHER (INC. RED—DEC. BLK.)	23	04-8 -7	29,825	22,875	6,080	790	2,960	8,250	2,805	3,470	1,635	1,010	7,240	15,655
	24													
	25													
INVENTORIES (INC. RED—DEC. BLACK)	26	08	12,030	6,509	1,389	3,676	265	2,022	6,889	2,114	4,815	13,818	11,796	5,287
	27													
DUE FROM AFFILIATED COMPANIES (INC. RED—DEC. BLACK)	28	11"A"												
	29													
OTHER INV. & ADV. EMP. LOANS & ACCTS. REC. (INC. RED—DEC. BLACK)	30	13-18												
	31													
PLANT PROPERTY & EQUIPMENT (INC. RED—DEC. BLACK)	32	16	15,200	18,400	3,000	2,000	1,500	6,500	1,900	1,000	1,000	3,900	10,400	8,000
	33													
PREPAYMENT & DEFERRED CHARGES (INC. RED—DEC. BLACK)	34	21-5 -6	325	251	2,007	630	1,004	2,381	352	515	481	1,348	1,033	782
	35													
	36													
	37													
CURRENT LIABILITIES (INC. BLK.—DEC. RED)	38	31 9	3,242	12,266	7,739	5,646	3,309	5,402	6,920	2,265	5,252	3,933	9,335	2,931
	39													
DUE TO AFFILIATED COMPANIES (INC. BLACK—DEC. RED)	40	11"B"												
	41													
FUNDED DEBT (INC. BLACK—DEC. RED)	42	41												
	43													
	44													
	45													
	46													
	47													
	48													
TOTAL NET CHANGES IN CASH RESULTING	49													
FROM BALANCE SHEET CHANGES (L20 TO 48) (INC. BLACK—DEC. RED)	50		35,912	35,769	4,737	2,550	2,420	3,707	1,288	3,704	8,951	11,427	21,134	14,635
	51													
AMOUNT UNACCOUNTED FOR	52			(NOTE: FIGURES USED ARE NOT ACTUAL, BEING SELECTED AS EXAMPLES ONLY.										
	53													
	54													
NET CHANGE IN CASH POSITION PER L50 SCHED. "B" (INC. BLACK—DEC. RED)	55		$ 88,335	$ 97,552	$ 5,343	$ 6,005	$ 10,042	$ 21,390	$ 10,352	$ 8,790	$ 2,056	$ 21,198	$ 42,588	$ 54,964

NOTE: LINE 5 REPRESENTS TOTAL RESERVES PROVIDED. LINES 6 TO 11 REPRESENT RESERVES PROVIDED EACH MONTH AND PERIOD LESS CHARGES IN PERIODS AS WRITE-OFFS ARE ANTICIPATED. LINE 52 REPRESENTS DIFFERENCE LINE 55 SCHEDULE "A" AND LINE 50 SCHEDULE "B". THEREFORE LINE 52 MUST BE FILLED IN AFTER TENTATIVE TOTAL LINE 55 HAS BEEN ARRIVED AT. THIS UNACCOUNTED FOR AMOUNT SHOULD REPRESENT FLUCTUATION OF RESERVES IN INVENTORY VALUES MONTH TO MONTH.

*This figure should appear in red

Figure 1. Cash Summary reconciling income schedule No. "C" with cash receipts and disbursements, Schedule "B".

A CHEMICAL Co.

CASH BUDGET—FISCAL YEAR 1934

SCHEDULE OF CASH RECEIPTS, DISBURSEMENTS AND CASH BALANCES

NO. B

DESCRIPTION	LINE NO.	SCHED NO.	ACTUAL PRIOR FISCAL YEAR	EST. CURRENT FISCAL YEAR	MONTH OF Jan. 1934	MONTH OF Feb. 1934	MONTH OF Mar. 1934	3 MOS. ENDING Mar. 31 1934	MONTH OF Apr. 1934	MONTH OF May 1934	MONTH OF June 1934	3 MOS. ENDING June 30, 1934	6 MOS. ENDING June 30, 1934	6 MOS. ENDING Dec. 31, 1934
ESTIMATED CASH RECEIPTS	1													
FROM CUSTOMERS ACCOUNTS (L23)	2	04	$1,045,700	$1,180,000	$ 90,000	$ 93,000	$ 96,000	$ 279,000	$ 97,000	$ 100,000	$ 100,000	$ 297,000	$ 576,000	$ 604,000
	3													
" MISC. COLLECTIONS (L24-30)	4		595	480	40	40	40	120	40	40	40	120	240	240
	5	TO												
	6													
	7													
OTHER RECEIPTS (SPECIFY) (L31)	8	07												
	9													
	10													
INTER-CO ACCOUNTS (L40)	11	11"A"												
	12													
TOTAL RECEIPTS	13		$1,046,295	$1,180,480	$ 90,040	$ 93,040	$ 96,040	$ 279,120	$ 97,040	$ 100,040	$ 100,040	$ 297,120	$ 576,240	$ 604,240
	14													
	15													
	16													
	17													
	18													
	19													
ESTIMATED CASH DISBURSEMENTS	20													
FOR PAYROLLS (L30)	21	31	121,300	131,770	10,000	10,600	10,370	30,970	11,400	10,600	11,500	33,500	64,470	67,300
" PLANT OPERATIONS (L31-34)	22		720,300	320,000	62,000	67,500	61,000	190,500	66,500	72,500	72,500	211,500	402,000	418,000
" GEN. & ADM. EXP. (L35-44)	23		76,305	81,920	6,710	6,585	6,710	20,005	6,260	6,735	6,660	19,655	39,660	42,260
" RESEARCH PATENT EXP. (L45-46)	24		4,240	5,400	450	450	450	1,350	450	450	450	1,350	2,700	2,700
" TAXES, INS., DEF., ETC. (L47)	25		6,300	7,815	2,637	-	1,635	4,272	278	115	150	543	4,815	3,000
" FED. & STATE INCOME TAXES (L48)	26	TO	15,745	19,173	-	-	4,433	4,433	-	-	5,874	5,874	10,307	8,866
" CONST. J. O'S (APPROVED) (L49)	27		6,200	7,400	3,000	2,000	1,500	6,500	900	-	-	900	7,400	-
" CONST. J. O'S (CONTEMPLATED) (L50)	28		9,000	11,000	-	-	-	-	1,000	1,000	1,000	3,000	3,000	8,000
" PURCHASE OF PROPERTY (INC. SECURITIES) (L51)	29													
" OTHER ITEMS (SPECIFY) (L52)	30	39	480	600	50	50	50	150	50	50	50	150	300	300
	31													
	32													
	33													
	34													
" CASH DISCOUNT EARNED	35	"C"												
	36													
	37													
" INTER CO. ACCOUNTS (L40)	38	11"B"												
	39													
	40													
TOTAL DISBURSEMENTS	41		957,960	1,082,928	84,697	87,035	85,998	257,730	86,688	91,250	97,984	275,922	533,652	549,276
	42													
RECEIPTS IN EXCESS OF DISBURSEMENTS (BLACK)	43		88,335	97,552	5,343	6,005	10,042	21,390	10,352	8,790	2,056	21,198	42,588	54,964
RECEIPTS LESS THAN DISBURSEMENTS (RED)	44		1,919	2,150	150	150	150	450	150	200	200	550	1,000	1,150
	45													
	46													
CASH SUMMARY—BY PERIODS	47													
	48													
CASH AT BEGINNING OF PERIOD	49		$ 64,300	$ 152,635	$ 152,635	$ 157,978	$ 163,983	$ 152,635	$ 174,025	$ 184,377	$ 193,167	$ 174,025	$ 152,635	$195,223
CASH—INC. (L43 BLACK—DEC. L44 RED)	50		88,335	97,552	5,343	6,005	10,042	21,390	10,352	8,790	2,056	21,198	42,588	54,964
	51													
EST. TOTAL CASH AVAILABLE	52		$ 152,635	$ 250,187	$ 157,978	$ 163,983	$ 171,025	$ 174,025	$ 184,377	$ 193,167	$ 195,223	$ 195,223	$ 195,223	$250,187
	53													
	54													
NORMAL WORKING FUND REQUIRED	55		NOTE:	FIGURES USED ARE NOT ACTUAL, BEING SELECTED AS EXAMPLES ONLY.										

Figure 2. Cash Receipts and Disbursements schedule and cash balances.

actually spent to beginning of the budget period, to be spent during the budget period and to be carried over beyond the budget period by jobs. Figures carried from this schedule into Accounts Payable, Schedule "A", etc. Fig. 6.

8. No. 34: Schedule of Payroll Accrued showing analysis of payroll as budgeted by number of employees and amounts detailed by departments. Figures carried from this schedule into departmental budgets and into accounts payable schedule of the cash budget. Fig. 7.

9. No. 04-5-7: Accounts Receivable Schedule showing starting and closing balances, billings taken from sales schedule, also all other types of receipts and removals by collections, write-offs, etc. Figures carried into Schedules "A" and "B". Fig. 8.

10. No. 8: Schedule of Inventories in summary form by major products showing quantity, unit and dollar values at beginning and end of period, also estimated purchases, estimated production and usage and/or sales. Set up by raw, process, finished manufactured and finished resale materials. Figures carried into Accounts Payable and Schedules "A" and "B".

11. No. 21-25-26: Schedule of Prepaid and Deferred Charges to arrive at distribution by departments, etc., also to carry into Accounts Payable, Schedule "A", etc.

12. No. 31 to 39: Accounts Payable Schedule showing opening and closing balance, credits to payables from various sources arrived at on other schedules and removals by payments also by sources and arrived at on other schedules. Figures carried to Schedule "B". Fig. 9.

13. Nos. 11-A & 11-B: Covering inter-company receivables and payables by companies carried into Schedules "A" and "B" and offset in budget of creditor or debtor units.

All schedules show "actuals for the prior fiscal year" in the extreme left hand column followed by the total of the "estimate for the current year" and moving over to the right the first six months of the budget period are shown by months, totaled by quarters and six months with the last six months of the year shown in total only, in the extreme right hand column next to the total column for the first six months. This set up allows for convenient comparisons and quick computations.

At the beginning of each year, the six months January to June are budgeted separately by months with July to December in total only. At mid-year, July to December are budgeted separately by months and January-June added in on actual basis. In principle, budgets are prepared at the beginning of the year for the full year ahead and are revised at mid-year for the last half. Revisions at more frequent intervals are sometimes necessary for operating units in which important changes in operating policies or business conditions may have occurred.

In setting up the budget for the Research and Development Program, a double budget is required. One by classification of outlay as salaries, rent, etc., the other by major research problems or jobs, with the usual spread by months.

PRODUCT Sulphuric Acid COMPANY ________ WORKS ________ MONTH Calendar Yr. 1934 — Budget for

	Unit	Production	To Other Depts.	Milled	Packed	Shipped
BUDGET	Ton	6,200	1,250	-	4,975	4,975
ACTUAL						

		Used per unit Budget	Used per unit Actual	Price per unit Budget	Price per unit Actual	Cost per unit Budget	Cost per unit Actual	Cumulative Unit Quan.	Cumulative Unit Cost
Purchased Mat'l.									
Fresh Water	MCF	.0200		$2.0000		$ .0400			
Fuel Oil	Gal	.0600		.0650		.0039			
Sulphur	Ton	.5000		27.5000		13.7500			
Manf'd. Mat'l.									
Steam	m lb	.3000		.6000		.1800			
Power	kwh	30.0000		.0200		.6000			
Salt Water									
Refrigeration									

	Prod.	To Other Depts.	Shipmts.		Cumulative Tot. Costs Budget	Actual	
Inv				Pur.Matl.	85,522		13.7939
Jan	500	100	400	Mfd.Matl.			-
Feb	450	90	375	Services	4,836		.7800
Mar	500	100	400	Supplies	620		.1000
Qtr	1,450	290	1,175	Supervn.	248		.0400
Mos				Labor	3,410		.5500
Bud				Rep.Labor	1,116		.1800
Var				Material	744		..1200
Apl	500	100	400	Res.Reps.	1,240		.2000
May	500	100	400	Plt.Gen.Exp.	713		.1150
June	500	100	400	Taxes,etc.	1,240		.2000
Qtr	1,500	300	1,200				
6 Mos.	2,950	590	2,375				
Bud							
Var				Total	99,689		16.0789
July				Deprec.	3,720		.6000
Aug				Total Mfg.	103,409		16.6789
Sept							
Qtr				Shipped	82,834		16.6500
Mos				Packing			
Bud				Supplies	2,488		.5000
Var							
Oct				Labor	249		..0500
Nov				Rep. Lab.	497		.1000
Dec				Rep. Mat.	995		.2000
Qtr				P.G.Exp.			
6 Mos.	3,250	660	2,600	Tot.Pkg.	4,229		.8500
Yr.	6,200	1,250	4,975				
Bud				Container			
Var	Bulk Material						
	Tons	Amount	Per Ton	Shipping			
Inv.	1,000	$16,500	$16.50	Supplies	497		.1000
Prod.	6,200	103,409	16.68	Deprec.	746		.1500
	7,200	$119,909	$16.65	Labor	497		.1000
Used, etc.	6,225	103,646	16.65	Rep.Lab.	398		.0800
Inv. 12/31/34	975	$16,263	$16.68	Rep.Mat.	199		.0400
				Tot.Ship.	2,337		.4700
				Tot.Cost	$ 89,400		$17.9700

Figure 4

A CHEMICAL Co.
INCOME BUDGET—FISCAL YEAR 1934
ESTIMATED INCOME STATEMENT SCHEDULE No. C

DESCRIPTION	Line No.	Sched. No.	1933 Actual Prior Fiscal Year	1934 Est. Current Fiscal Year	Month of Jan. 1934	Month of Feb. 1934	Month of March 1934	3 Mos. Ending March 31, 1934	Month of April 1934	Month of May 1934	Month of June 1934	3 Mos. Ending June 30, 1934	6 Mos. Ending June 30, 1934	6 Mos. Ending Dec. 31, 1934
NET SALES BILLED—CUSTOMERS	1	51	$1,075,800	$1,203,400	$ 95,800	$ 92,000	$ 98,600	$ 286,400	$ 94,000	$ 103,000	$ 98,000	$ 295,000	$ 581,400	$ 622,000
COST OF SALES BILLED—CUSTOMERS	2	52	790,700	894,650	71,850	69,900	72,000	213,750	71,400	76,200	73,000	220,600	434,350	460,300
PROFIT ON SALES	3		285,100	308,750	23,950	22,100	26,600	72,650	22,600	26,800	25,000	74,400	147,050	161,700
NET SALES BILLED—AFF. CO.'S	4	53												
COST OF SALES BILLED—AFF. CO.'S	5	54												
INTER-COMPANY PROFIT	6													
TOTAL PROFIT ON SALES	7		285,100	308,750	23,950	22,100	26,600	72,650	22,600	26,800	25,000	74,400	147,050	161,700
DEDUCT:	8													
Inventory Adjustments	9	55	2,190	2,400	200	200	200	600	200	200	200	600	1,200	1,200
Suspension Expense	10	56												
Miscellaneous	11	57	480	600	50	50	50	150	50	50	50	150	300	300
	12		2,670	3,000	250	250	250	750	250	250	250	750	1,500	1,500
GROSS PROFIT	13		282,430	305,750	23,700	21,850	26,350	71,900	22,350	26,550	24,750	73,650	145,550	160,200
COMMERCIAL EXPENSES	14													
Selling Expense	15	58	84,700	93,300	7,300	7,500	7,500	22,300	7,400	7,500	7,600	22,500	44,800	48,500
Warehousing Expense	16	59	3,300	3,650	300	275	300	875	300	275	300	875	1,750	1,900
Field Service Expense	17	60												
Market Development Expense	18	61												
TOTAL COMM. EXPENSE	19		88,000	96,950	7,600	7,775	7,800	23,175	7,700	7,775	7,900	23,375	46,550	50,400
SELLING PROFIT	20		194,430	208,800	16,100	14,075	18,550	48,725	14,650	18,775	16,850	50,275	99,000	109,800
ADM. AND GEN. EXPENSE	21													
Administrative Expense	22	62	42,290	44,200	3,900	3,700	3,600	11,200	3,700	3,800	3,700	11,200	22,400	21,800
	23	63												
Cash Discount Allowed	24	64	8,075	9,025	720	690	740	2,150	705	770	735	2,210	4,360	4,665
Res. for Doubtful Accounts	25	65	5,038	6,017	479	460	493	1,432	470	515	490	1,475	2,907	3,110
General Engineering Expense	26	66	180	240	20	20	20	60	20	20	20	60	120	120
Miscellaneous General Expense	27	67	930	900	75	75	75	225	75	75	75	225	450	450
Total Adm. & Gen. Exp	28		56,423	60,382	5,194	4,945	4,928	15,067	4,970	5,180	5,020	15,170	30,237	30,145
Operating Profit	29		138,007	148,418	10,906	9,130	13,622	33,658	9,680	13,595	11,830	35,105	68,763	79,655
MISCELLANEOUS INCOME	30													
Interest Earned	31	70	430	300	25	25	25	75	25	25	25	75	150	150
Discount Earned	32	71	1,910	2,150	150	150	150	450	150	200	200	550	1,000	1,150
Exchange Earned	33	72												
Dividends	34	73												
Royalties & Licenses	35	74												
Commissions & Fees	36	75												
Other Income	37	76	165	180	15	15	15	45	15	15	15	45	90	90
Total Misc. Income	38		2,505	2,630	190	190	190	570	190	240	240	670	1,240	1,390
Gross Income	39		140,512	151,048	11,096	9,320	13,812	34,228	9,870	13,835	12,070	35,775	70,003	81,045
OTHER DEDUCTIONS	40													
Interest Paid	41	81												
Int. & Exp. on Bonds & Deb.	42	82												
Research & Process Dev. Exp.	43	83	7,350	8,400	700	700	700	2,100	700	700	700	2,100	4,200	4,200
Patent Expense	44	84	490	600	50	50	50	150	50	50	50	150	300	300
Reserved for Contingencies	45	85	2,400	2,400	200	200	200	600	200	200	200	600	1,200	1,200
Total Other Deductions	46		10,240	11,400	950	950	950	2,850	950	950	950	2,850	5,700	5,700
Net Income Before Tax. Etc.	47		130,272	139,648	10,146	8,370	12,862	31,378	8,920	12,885	11,120	32,925	64,303	75,345
	48	87												
Franchise and Capital Taxes	49	88	1,400	1,400	120	120	120	360	120	120	120	360	720	720
Provision for Income Tax	50	89	17,733	19,004	1,379	1,134	1,752	4,265	1,210	1,755	1,512	4,477	8,742	10,262
	51		19,133	20,444	1,499	1,254	1,872	4,625	1,330	1,875	1,632	4,837	9,462	10,982
NET INCOME (To L1)	52	"A"	$ 111,139	$ 119,204	$ 8,647	$ 7,116	$ 10,990	$ 26,753	$ 7,590	$ 11,010	$ 9,488	$ 28,088	$ 54,841	$ 64,363
ADD: Inter-Co. Profit Realized	53	93												
DED: Inter-Co. Profit Not Realized	54	94												
NET INCOME	55		NOTE:	FIGURES USED ARE NOT ACTUAL, BEING SELECTED AS EXAMPLES ONLY.										

Figure 3. Income account from sales to net income.

Co.
Budget of Operations
Schedule of Selling Expense
Calender Year 1934. No. 58

DESCRIPTION	Line No.	Sched. No.	Actual Prior Fiscal Year	Est. Current Fiscal Year	Month of Jan. 1934	Month of Feb. 1934	Month of Mar. 1934	3 Mos. Ending Mar. 31, 1934	Month of April 1934	Month of May 1934	Month of June 1934	3 Mos. Ending June 30, 1934	6 Mos. Ending June 30, 1934	6 Mos. Ending Dec. 31, 1934
	1													
Salaries	2 3		$ 37,800	$ 41,850	$ 3,300	$ 3,300	$ 3,300	$ 9,900	$ 3,550	$ 3,550	$ 3,550	$ 10,650	$ 20,550	$ 21,300
Commissions	4 5		15,800	16,750	1,300	1,200	1,400	3,900	1,250	1,500	1,400	4,150	8,050	8,700
Rent & Light	6 7		1,440	1,440	120	120	120	360	120	120	120	360	720	720
Traveling	8 9		16,900	19,250	1,500	1,400	1,500	4,400	1,650	1,650	1,650	4,950	9,350	9,900
Stationery & Supplies	10 11		879	960	80	80	80	240	80	80	80	240	480	480
Postage	12 13		111	120	10	10	10	30	10	10	10	30	60	60
Telephone	14 15		3,250	3,600	300	300	300	900	300	300	300	900	1,800	1,800
Telegraph	16 17		110	120	10	10	10	30	10	10	10	30	60	60
Maintenance of Office Equipt.	18 19		115	120	10	10	10	30	10	10	10	30	60	60
Miscellaneous	20 21		190	180	15	15	15	45	15	15	15	45	90	90
Insurance & Bonds	22 23		1,140	1,200	100	100	100	300	100	100	100	300	600	600
Advertising	24 25		6,265	6,990	500	775	450	1,725	275	145	345	765	2,490	4,500
Subscriptions, Dues, Books & Periodicals	26 27		580	600	45	170	195	410	20	-	-	20	430	170
Depreciation Office Equipt.	28 29		120	120	10	10	10	30	10	10	10	30	60	60
	30													
	31													
	32													
	33													
	34													
No. of Employees	35				11	11	11		12	12	12			12
	36													
	37													
	38													
	39													
	40													
	41													
TOTAL	42		$ 84,700	$ 93,300	$ 7,300	$ 7,500	$ 7,500	$ 22,300	$ 7,400	$ 7,500	$ 7,600	$ 22,500	$ 44,800	$ 48,500
"CASH COST"—TOTAL	43		84,580	93,180	7,290	7,490	7,490	22,270	7,390	7,490	7,590	23,470	44,740	48,440
Payroll	44	34	37,800	41,850	3,300	3,300	3,300	9,900	3,550	3,550	3,550	10,650	20,550	21,300
Mat'ls & Expend.—Direct	45	31 29	45,640	50,130	3,890	4,090	4,090	12,070	3,740	3,840	3,940	11,520	23,590	26,540
" " —Allocated from Oth. Depts.	46													
Mat'ls Used Included in Inventories	47	08												
Prepayments & Deferred Charges	48	21 5-6	1,140	1,200	100	100	100	300	100	100	100	300	600	600
"NON-CASH"—TOTAL	49		120	120	10	10	10	30	10	10	10	30	60	60
Depreciation	50	10	120	120	10	10	10	30	10	10	10	30	60	60
Other (Specify)	51													
"CREDITS"—TOTAL	52													
Billings to Affiliated Companies	53													
Other (Specify)	54													
TOTAL (L42 Above)	55		$84,700	$ 93,300	$ 7,300	$ 7,500	$ 7,500	$ 22,300	$ 7,400	$ 7,500	$ 7,600	$ 22,500	$ 44,800	$ 48,500

NOTE.—USE THIS SCHEDULE FOR ALL SUPPORTING "CASH" AND "INCOME" BUDGET SCHEDULES EXCEPT WHERE SPECIALLY PRINTED SCHEDULES HAVE BEEN PROVIDED. DOUBLE SPACING MAKES CONVENIENT RECORD FOR FILLING IN ACTUALS FOR COMPARISON.

Figure 5. Blanket schedule for all departmental budgets, i.e., plant general expense.

															______Co.
															CASH BUDGET—FISCAL YEAR 1934
															SCHED. OF "CONST. JOB ORDERS—APPROVED" NO. 16
DESCRIPTION OF JOB	Line No.	Job Order No.	Total Am't Authorized	Actual Expend's to Beg. of Period	Est. Expenditure for the Period	Month of Jan. 1934	Month of Feb. 1934	Month of Mar. 1934	Month of Apr. 1934	Month of May 1934	Month of June 1934	6 Mos. Ending June 30, 1934	6 Mos. Ending Dec. 31, 1934	Expend. Subsequent to End of Period	Funds Not Required
	1	NT													
Vent.of Nit.Acid.Prod.System.	3	39	$ 1,100	$ 150	$ 950	$ 200	$ 150	$ 400	$ 200			$ 950			
2 Ford Trucks	5	40	1,150	575	575	575	-0-					575			
2 Chevrolet Coaches	7	42	1,150	-	1,150	575	575					1,150			
Impr.&Add'ts. to Contact Plt.	10	43	3,400	375	3,025	1,425	850	600	150			3,025			
Add't. to Sprinkler System	12	44	500	-	500	75	165	190	70			500			
Add'l.Equipt.for Mur.Acid Plt.	14	45	1,200	-	1,200	150	260	310	480			1,200			
TOTAL	43		$8,500	$1,100	$7,400	$ 3,000	$ 2,000	$ 1,500	$ 900			$ 7,400			
DISTRIBUTION BY ACCOUNTS	44														
To Fixed Capital	45	16	8,500	1,100	7,400	3,000	2,000	1,500	900			7,400			
To Other Accounts (Specify)	46														
Contra (Mat'l Tr.) (L54 Below)	47	16													
Total (L43 Above)	48		8,500	1,100	7,400	3,000	2,000	1,500	900			7,400			
"CASH COST"	49														
Payroll	50	34													
Materials Purchased Direct	51	31-9	8,500	1,100	7,400	3,000	2,000	1,500	900			7,400			
Mat'ls Used Included in Inventories	52	08													
"NON-CASH COST"	53														
Mat'l Tr'er'd from Oth. Pl'ts or Depts.	54	16													
TOTAL (L43 & 48 ABOVE)	55		$8,500	$ 1,100	$7,400	$ 3,000	$ 2,000	$ 1,500	$ 900			$ 7,400			

Separate sheet should be used for job orders approved and for those contemplated but not yet approved. The amounts shown on line 48 covering the estimated expenditures for the current period should be carried to Schedule A—Line 33.

Figure 6. Schedule of Construction Job Orders.

																									______Co.
																									CASH BUDGET—FISCAL YEAR 1934
																									SCHEDULE OF PAYROLL ACCRUED NO. 34
BY PAYROLLS AND DEPARTMENTAL DISTRIBUTION	Line No.	Sched. No.	Actual Prior Fiscal Year Amt	Est. Current Fiscal Year Amt		Month of Jan. 1934 No.	Amt	Month of Feb. 1934 No.	Amt	Month of Mar. 1934 No.	Amt	3 Mos. Ending Mar. 31, 1934 No.	Amt	Month of April 1934 No.	Amt	Month of May 1934 No.	Amt	Month of June 193 No.	Amt	3 Mos. Ending June 30, 1934 No.	Amt	6 Mos. Ending June 30, 1934 No.	Amt	6 Mos. Ending Dec. 31, 1934 No.	Amt
Salaried Employees	3																								
Selling Expense	5	58	$37,800	$41,850		11	$ 3,300	11	$ 3,300	11	$ 3,300		$ 9,900	12	$ 3,550	12	$ 3,550	12	$ 3,550		$10,650		$ 20,550	12	$21,300
Administrative Expense	7	62	26,500	27,600		11	2,300	11	2,300	11	2,300		6,900	11	2,300	11	2,300	11	2,300		6,900		13,800	11	13,800
Research&Process Dev.Exp.	9	83	3,600	3,600		2	300	2	300	2	300		900	2	300	2	300	2	300		900		1,800	2	1,800
Factory Payroll	12																								
Supervision & Plant Office	14	08	7,200	7,200		3	600	3	600	3	600		1,800	3	600	3	600	3	600		1,800		3,600	3	3,600
Total Salary Payroll	18		75,100	80,250		27	6,500	27	6,500	27	6,500		19,500	28	6,750	28	6,750	28	6,750		20,250		39,750	28	40,500
Hourly Employees	21																								
Sulphuric Acid Dept.Labor	23		3,920	4,404			355		325		355		1,035		355		355		355		1,065		2,100		2,304
Rep. Labor	24		1,940	2,011			160		150		160		470		160		160		160		480		950		1,061
Nitric Acid Dept. Labor	26		7,840	3,000			250		250		250		750		250		250		250		750		1,500		1,500
Rep. Labor	27		1,480	1,500			125		125		125		375		125		125		125		375		750		750
Muriatic Acid Dept.Labor	29		17,200	20,000			1,600		1,300		1,600		4,500		1,600		1,600		1,600		4,800		9,300		10,700
Rep. Labor	30		9,300	12,000			950		750		950		2,650		950		950		950		2,850		5,500		6,500
Plant General Expense.Labor	32		8,100	8,400			700		700		700		2,100		700		700		700		2,100		4,200		4,200
Rep. Labor	33		1,120	1,200			100		100		100		300		100		100		100		300		600		600
TOTAL	49		$120,970	$132,765			$10,740		$10,200		$ 10,740		$31,680		$10,990		$ 10,990		$10,990		$ 32,970		$64,650		$68,115
CASH DISTRIBUTION	51																								
"Cash to be Paid Out" (To L30)	52	31-39	121,300	131,770			10,000		10,600		10,370		30,970		11,400		10,600		11,500		33,500		64,470		67,300
"Change in Accrued Payroll Account"	53		330	995			740		400		370		710		410		390		510		530		180		815
TOTAL (L49 ABOVE) (TO L3)	55	31-39	$ 120,970	$ 132,765			$ 10,740		$ 10,200		$ 10,740		$ 31,680		$ 10,990		$ 10,990		$ 10,990		$ 32,970		$ 64,650		$ 68,115

Note—Take directly from payrolls and show by departments above. From this schedule carry to expense manufacturing and other schedules in identifiable manner to line 49. Carry lines 52 and 53 to current liability schedule No. 31-39 lines 3 and 30.

Figure 7. Schedule of Payroll Accrued showing analysis of payroll.

CO.

CASH BUDGET—FISCAL YEAR 1934
SCHEDULE OF SECURITIES, TRADE NOTES & ACCTS. RECEIVABLE & ACCOUNTS RECEIVABLE OTHER
No. 04-5 / 7

DESCRIPTION	Line No.	Sched. No.	Actual Prior Fiscal Year	Est. Current Fiscal Year	Bal. Uncollected End of Budg. Period	Month of Jan. 1934	Month of Feb. 1934	Month of Mar. 1934	3 Mos. Ending Mar. 31, 1934	Month of Apr. 1934	Month of May 1934	Month of June 1934	3 Mos. Ending June 30, 1934	6 Mos. Ending June 30, 1934	6 Mos. Ending Dec. 31, 1934
EST. BALANCE BEG. OF PERIOD—TOTAL	1		$ 150,175	$ 180,000		$ 180,000	$ 186,080	$ 185,290	$ 180,000	$ 188,250	$ 185,445	$ 188,875	$ 188,250	$ 180,000	$ 187,240
Notes and Accounts Receivable—Trade	2	04-5	$ 150,175	$ 180,000		$ 180,000	$ 186,080	$ 185,290	$ 180,000	$ 188,250	$ 185,445	$ 188,875	$ 188,250	$ 180,000	$ 187,240
Securities and Other Receivable	3	07													
Containers Returnable—Omitted (L1 & 2)	4														
ADDITIONS:	5														
[redacted] Billings	6	81	1,075,800	1,203,400		95,800	92,000	98,600	286,400	94,000	103,000	98,000	295,000	581,400	622,000
Interest Earned	7	70	430	300		25	25	25	75	25	25	25	75	150	150
[redacted] Freight	8	72	10,800	12,500		1,000	900	1,100	3,000	900	1,200	1,100	3,200	6,200	6,300
Dividends Received	9	73													
Royalties & Licenses	10	74													
Commissions & Fees	11	75													
Misc. Income (Rents, Etc.)	12	76	165	180		15	15	15	45	15	15	15	45	90	90
Miscellaneous	13	57													
Other Receipts (Specify)	14														
	15														
Est. Total Additions	16		1,087,195	1,216,380		96,840	92,940	99,740	289,520	94,940	104,240	99,140	298,300	587,840	628,540
Est. Total Receivable	17		1,237,370	1,396,380		276,840	279,020	285,030	469,520	283,190	289,685	288,015	486,570	767,840	815,780
	18														
DEDUCTIONS:	19														
Cash Discount Allowed	20	64	8,075	9,025		720	690	740	2,150	705	770	735	2,210	4,360	4,665
Bad Debts, Written Off	21	65	3,000	4,009											4,000
Brokerage & Allowances	22														
Est. Collections (L33)	23	04-5-7	1,045,700	1,180,000		90,000	93,000	96,000	279,000	97,000	100,000	100,000	297,000	576,000	604,000
Interest Earned	24	70	430	300		25	25	25	75	25	25	25	75	150	150
Exchange Earned	25	71													
Dividends Received	26	72													
Royalties & Licenses	27	73													
Commissions & Fees	28	75													
Misc. Income (Rents, Etc.)	29	76	165	180		15	15	15	45	15	15	15	45	90	90
Miscellaneous	30	57													
Other Receipts (Specify)	31														
Est. Total Deductions	32		1,057,370	1,193,505		90,760	93,730	96,780	281,270	97,745	100,810	100,775	299,330	580,600	612,905
	33														
EST. BALANCE END OF PERIOD—TOTAL	34														
Notes and Accounts Receivable—Trade	35	04-5	180,000	202,875		186,080	185,290	188,250	188,250	185,445	188,875	187,240	187,240	187,240	202,875
Securities and Other Receivables	36	07													
	37														
EST. NET CHANGE DURING PERIOD (Inc. Black—Dec. Red) (To L23)	38	A	$ 29,825	$ 22,875		$ 6,080	$ 790	$ 2,960	$ 8,250	$ 2,805	$ 3,430	$ 1,635	$ 1,010	$ 7,240	$ 15,635
	39														
EST. COLLECTIONS—ARRIVED AS FOLLOWS:	40														
Bal. Beg. of Period as Above (Line 2)	41	04-5													
Less—Discounts, Bad Debts, Bkge. and All. (L20-22)	42	04-5													
GROSS BILLINGS (Per Above) (Line 6)	43	81													
Month of 193 (" ")	44														
" " 193 (" ")	45														
" " 193 (" ")	46														
Total 3 Mos. End. 193 (" ")	47														
Month of 193 (" ")	48														
" " 193 (" ")	49														
" " 193 (" ")	50														
Total 3 Mos. End. 193 (" ")	51														
Total 6 Mos. End. 193 (" ")	52														
Total 6 Mos. End. 193 (" ")	53														
Total Year End. 193 (" ")	54														
Cash Collections & Bal. Uncollected	55														

NOTE: START WITH ACTUAL BALANCE FIRST DAY OF PERIOD. IGNORE COLUMNS NOT NEEDED. SET UP ALL RECEIPTS AND COLLECTIONS ON ASSUMPTION THAT ALL PASS THROUGH ONE OF THE BALANCE SHEET CLASSIFICATIONS 04-07 INCL. OMIT FROM ALL BALANCES CONTAINERS RETURNABLE CARRIED IN RECEIVABLES AND OFFSET IN PAYABLES BUT NOTE AMOUNT SO OMITTED ON LINE 4 ABOVE. EST. CURRENT FISCAL YEAR COLUMN OF LINES 43 TO 54 REPRESENTS LINE 6 RUNNING DOWN INSTEAD OF ACROSS. SUCCEEDING COLUMNS REPRESENT SPREAD OF EXPECTED COLLECTIONS. COLUMN BAL. UNCOLLECTED END OF BUDGET PERIOD REPRESENTS BALANCE OF SCHEDULES 04 AND 05 REMAINING UNCOLLECTED AND BALANCES WITH LINE 55.

Figure 8. Accounts Receivable Schedule showing starting and closing balance.

CO.

CASH BUDGET—FISCAL YEAR 1934
SCHEDULE OF CURRENT LIABILITIES
No. 31 / 39

DESCRIPTION	Line No.	Sched. No.	Actual Prior Fiscal Year	Est. Current Fiscal Year		Month of Jan. 1934	Month of Feb. 1934	Month of Mar. 1934	3 Mos. Ending Mar. 31, 1934	Month of Apr. 1934	Month of May 1934	Month of June 1934	3 Mos. Ending June 30, 1934	6 Mos. Ending June 30, 1934	6 Mos. Ending Dec. 31, 1934
Est. Bal. Beginning of Period	1	31-9	$ 77,742	$ 74,500		$ 74,500	$ 82,239	$ 76,593	$ 74,500	$ 79,902	$ 87,022	$ 89,287	$ 79,902	$ 74,500	$ 83,835
ADDITIONS (Est. Commit. & Accruals)	2														
For Payrolls	3	34	120,970	132,765		10,740	10,200	10,740	31,680	10,990	10,990	10,990	32,970	64,650	68,115
" Raw Materials & Supplies	4	08	130,000	150,000		12,500	11,000	11,500	35,000	12,500	12,500	12,000	37,000	72,000	78,000
" Materials for Resale	5	08	585,700	680,000		55,000	50,000	55,000	160,000	60,000	60,000	60,000	180,000	340,000	340,000
" Power Purchased	6														
" Suspension Expense	7	56													
" Frt., Bkge. & All.—Trade & Inter-Co.	8		10,800	12,500		1,000	900	1,100	3,000	900	1,200	1,100	3,200	6,200	6,300
" Selling Expense	9	58	45,640	50,130		3,890	4,090	4,090	12,070	3,740	3,840	3,940	11,520	23,590	26,540
" Warehousing Expense	10	59	1,475	1,670		135	110	135	380	135	110	135	380	760	910
" Field Service Expense	11	60													
" Market Development Expense	12	61													
" Administrative Expense	13	62	15,580	16,480		1,590	1,390	1,290	4,270	1,390	1,490	1,390	4,270	8,540	7,940
" Gen'l Engineering Expense	14	66	180	240		20	20	20	60	20	20	20	60	120	120
" Misc. General Expense	15	67	930	900		75	75	75	225	75	75	75	225	450	450
" Interest (Banks, Mtgs., Etc.)	16	81													
" Interest (Bonds & Debentures)	17	82													
" Research & Proc. Dev. Expense	18	83	3,750	4,800		400	400	400	1,200	400	400	400	1,200	2,400	2,400
" Patent Expense	19	84	490	600		50	50	50	150	50	50	50	150	300	300
" Taxes (Not Income), Ins., Def. Charges, Etc.	20	21-9 / 8	6,300	7,815		2,637	-	1,635	4,272	278	115	150	543	4,815	3,000
" Federal & State Income Taxes	21	39	19,133	20,444		1,499	1,254	1,872	4,625	1,330	1,875	1,632	4,837	9,462	10,982
" Const. Job Orders—Approved	22	16	6,200	7,400		3,000	2,000	1,500	6,500	900	-	-	900	7,400	-
" Const. Job Orders—Contemplated	23	16	9,000	11,000		-	-	-	-	1,000	1,000	1,000	3,000	3,000	8,000
" Purchase of Prop. (Inc. Securities)	24														
" Other Items (Specify) Misc.	25	57	480	600		50	50	50	150	50	50	50	150	300	300
	26														
Total Additions	27		956,628	1,097,344		92,586	81,539	89,457	263,582	93,758	93,715	92,932	280,405	543,987	553,357
Total Payables	28		1,034,370	1,171,844		167,086	163,778	166,050	338,082	173,660	180,737	182,219	360,307	618,487	637,192
DEDUCTIONS (Est. Payments)	29														
For Payrolls	30	34	121,300	131,770		10,000	10,600	10,370	30,970	11,400	10,600	11,500	33,500	64,470	67,300
" Raw Materials & Supplies	31	08	130,000	150,000		12,000	12,500	11,000	35,500	11,500	12,500	12,500	36,500	72,000	78,000
" Materials for Resale	32	08	590,300	670,000		50,000	55,000	50,000	155,000	55,000	60,000	60,000	175,000	330,000	340,000
" Power Purchased	33														
" Suspension Expense	34	56													
" Frt., Bkge. & All.—Trade & Inter-Co.	35		12,500	12,500		1,000	900	1,100	3,000	900	1,200	1,100	3,200	6,200	6,300
" Selling Expense	36	58	45,640	50,130		3,890	4,090	4,090	12,070	3,740	3,840	3,940	11,520	23,590	26,540
" Warehouse Expense	37	59	1,475	1,670		135	110	135	380	135	110	135	380	760	910
" Field Service Expense	38	60													
" Market Development Expense	39	61													
" Administrative Expense	40	62	15,580	16,480		1,590	1,390	1,290	4,270	1,390	1,490	1,390	4,270	8,540	7,940
" Gen'l Engineering Expense	41	66	180	240		20	20	20	60	20	20	20	60	120	120
" Misc. General Expense	42	67	930	900		75	75	75	225	75	75	75	225	450	450
" Interest (Banks, Mtgs., Etc.)	43	81													
" Interest (Bonds & Debentures)	44	82													
" Research & Process Dev. Expense	45	83	3,750	4,800		400	400	400	1,200	400	400	400	1,200	2,400	2,400
" Patent Expense	46	84	490	600		50	50	50	150	50	50	50	150	300	300
" Taxes (Not Income), Ins., Def. Charges, Etc.	47	21-9 / 8	6,300	7,815		2,637	-	1,635	4,272	278	115	150	543	4,815	3,000
" Federal & State Income Taxes	48	39	15,745	19,173				4,433	4,433			5,874	5,874	10,307	8,866
" Const. Job Orders—Approved	49	16	6,200	7,400		3,000	2,000	1,500	6,500	900	-	-	900	7,400	
" Const. Job Orders—Contemplated	50	16	9,000	11,000						1,000	1,000	1,000	3,000	3,000	8,000
" Purchase of Prop. (Inc. Securities)	51														
" Other Items (Specify) Misc.	52	57	480	600		50	50	50	150	50	50	50	150	300	300
	53														
Total Deductions	54		959,870	1,085,078		84,847	87,185	86,148	258,180	86,838	91,450	98,184	276,472	534,652	550,426
EST. BAL. END OF PERIOD	55		74,500	86,766		82,239	76,593	79,902	79,902	87,022	89,287	84,035	83,835	83,835	86,766
EST. NET CHANGE DURING PERIOD (Inc. Black—Dec. Red) (To L38)	56	A	$ 3,242	$ 12,266		$ 7,739	$ 5,646	$ 3,309	$ 5,402	$ 6,920	$ 2,265	$ 5,252	$ 3,933	$ 9,335	$ 2,931

DEDUCT FROM BEGINNING BALANCES CONTAINERS RETURNABLE SHOWN ON SCHEDULE 04-7 L4.
INCLUDE ON THIS SCHEDULE TOTAL OF ITEMS AS PAYROLL, TAXES, INSURANCE, ETC. DO NOT DUPLICATE UNDER FINAL RESTING PLACE AS IN MFG., ADM., SELLING, ETC.

Figure 9. Accounts Payable Schedule showing opening and closing balance.

British Chemical Industry in 1934

By M. D. Curwen, B. Sc., A. I. C.

THE progress reported last year has been continued steadily, and from practically all quarters we hear reports of better trade. This is especially true of the chemical industries, and numerous inquiries are being received by chemical plant manufacturers. The last information is as good as any in indicating that the progress is real from all points of view.

Of chemicals themselves we have the following figures. The Board of Trade has slightly altered the method of reporting, some chemicals being excluded by name and included collectively. Thus sulphuric acid in the export lists does not appear.

Imports in £ sterling for 11 months ending Nov. 30th

Commodity	1933	1934	Increase or Decrease
Acetic Acid	244,000	268,100	+ 24,100
Boric Acid	20,400	34,400	+ 14,000
Tartaric Acid & Tartrates	93,400	165,600	+ 72,200
Carbide	425,300	528,500	+ 103,200
Potassium Compds.	1,108,500	1,201,200	+ 92,700
Sodium Compds.	281,200	319,700	+ 38,500
Citric Acid	23,000	46,300	+ 23,300
Coal Tar Dyestuffs	956,200	1,175,900	+ 219,700
Drugs & Medicines	1,400,600	1,534,700	+ 134,100
Extracts for Tanning	657,600	750,800	+ 93,200
Painters Colours (including Carbon Black)	1,191,700	1,414,300	+ 222,600
Total*	9,066,500	10,400,100	+1,333,600

Exports in £ sterling for 11 months ending Nov. 30th

Commodity	1933	1934	Increase or Decrease
Acids (Citric and others not specified)	323,500	353,300	+ 29,800
Aluminum Compds.	260,000	349,900	+ 89,900
Ammonium Sulphate	1,819,700	1,590,100	—229,600
Other Ammonium Compds.	148,900	179,900	+ 31,000
Bleaching Powder	158,400	153,000	— 5,400
Coal Tar Products	590,500	744,000	+153,500
Copper Sulphate	567,300	537,200	— 30,100
Disinfectants	746,000	806,600	+ 60,600
Glycerine	347,800	381,500	+ 33,700
Potassium Compds.	150,900	148,800	— 2,100
Sodium Compds. (not NaCl)	2,900,000	2,938,100	+ 38,100
Dyes	1,079,000	1,248,000	+169,000
Drugs	2,441,000	2,636,300	+195,300
Paints	2,487,600	2,626,500	+138,900
Total*	17,087,000	18,060,500	+973,500

The following analysis is also interesting:

Exports were higher to: B. W. Africa, S. Africa, India, Malaya, Ceylon, Australia, New Zealand, Canada, B. W. Indies, Soviet Union, Sweden, Norway, Netherlands, Belgium, Switzerland, Italy, Greece, Japan, U. S. A., Chile, Argentine.

Exports were less to: Hong Kong, Germany, France, Portuguese W. Africa, Spain, Egypt, China, Brazil.

Imports were higher from: S. Africa, Canada, Sweden, Norway, Germany, Netherlands, Belgium, France, Switzerland, Italy, Yugoslavia, Japan, U. S. A., Chile, Argentine.

Imports were less from: B. India, Soviet Union, Java.

Business in 1934 started quietly and some prices, *e.g.*, potash compounds and lead products dropped. Fertilizers continued to improve up to May but then declined rapidly. Uncertain conditions reigned for a time owing to potash imports from Spain and Russia. Exports of ammonium sulphate suffered another decline (they have been dropping since 1929) but prices have increased. The demand for industrial chemicals and raw materials has been fairly steady throughout the year and during some months was good. One of the brightest features of the year was the trade in nitrocellulose solvents, formaldehyde and cresylic acid, in other words the raw materials for the lacquer and synthetic resin industries. Phenol, nevertheless, has been quiet and the tendency has been for the price to decline. During the year there was a good deal of competition from foreign materials and this led to a drop in the demand for home made chemicals during the middle of the year. Business in July was affected by the drop in the demand for artificial silk, but a recovery has since been noted.

Exports have brightened considerably especially in coal-tar products which had dropped in years past, in glycerine, which two years ago soap makers were throwing to waste, and in dyestuffs which continue a triumphant course. Paints and drugs again have done excellently. The decline in copper sulphate is mainly due to the plight of the vine-growing industry. Exports have dropped nearly 30 per cent. since 1932.

The Ottawa Agreement

Last year we made reference to the Ottawa Agreement and to the hopes of increased trade between the Dominions and the Mother Country. We indicated some difficulties that confronted the new agreements and the unfavorable conditions of the exchange. These difficulties are by no means over, but improvements are felt. One important help given British manufacturers

* Certain chemicals included in the totals have not been shown in detail and consequently the totals do not correspond with the sums of the detailed figures.

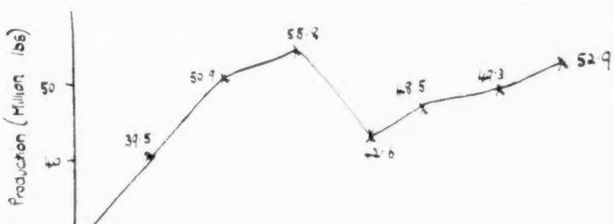
is a list of chemicals and drugs made in Canada in order that British makers may know what the duties and preferences are. Moreover, Canadian authorities have reduced from 50 per cent. to 25 per cent. the Empire content requirement for a wide range of materials. The good work resulting from the agreement was in large measure due to the Association of British Chemical Manufacturers. In its further endeavors to protect chemical manufacturers in this country and to help create certain industries here it has been able to secure additional duties on di- and tri-sodium phosphate and lead acetate, and is continuing to press for an additional duty on superphosphates, Duty on dried foliage, flowers, plants and roots, when used solely for the manufacture of drugs was reduced to 10 per cent. Rosin, raw tung oil, Persian berries, quercitron bark extract, gum tragacanth and sumac leaves (unground) were placed on the free list. The Association however opposed placing oxalic acid on the free list as it is hoped that there will soon be an adequate supply from British sources.

During the year ending June 1934, nearly all sulfur used was imported from the United States, but it may be anticipated that shortly a good deal of Sicilian sulfur will be used as the result of agreements. Large quantities of the latter have already arrived this half year, since July.

The recommendations of the Import Duties Advisory Committee regarding dyestuffs was entirely accepted by the Government and a new Dyestuffs Act continues the old system of prohibition and license. The scope is limited to the prohibition of dyestuffs proper and their intermediates.

A report in August showed that the British dyestuffs industry in 1933 had again increased its output and had nearly reached the record of 1929, the year before the slump.

Production in Millions of Pounds Weight



There have been few important dye discoveries, although Prof. J. C. Thorpe has drawn attention to a new blue pigment with a structure similar to chlorophyll. It is extremely stable standing up to 500° C., withstands light and even fusing with caustic soda and may prove the forerunner of a new series of superfast dyes.

Auxiliary dyeing chemicals have received a good deal of attention. An agent making it possible to strip goods dyed with naphthols and vat dyes, notoriously fast to such treatment, was marketed this year by Imperial Chemical Industries, Ltd.

Benzene is still a thorn in the side of dyestuffs manufacturers (and many other manufacturers too) and it is hoped to keep benzene at a reasonable price compared with what foreign manufacturers have to pay. Because of the Excise duty the price has been increased by 8d. per gallon, whereas in the United States it costs the manufacturer 19-20 cents per gallon, or half the price in this country.

Oil and Fuel Notes, Etc.

The Hydrocarbon Oils Bill, passed by Parliament, gives guaranteed preference to home petrol manufacture from coal, shale or peat, and its effect has already been felt. The hydrogenation plant of Imperial Chemical Industries, Ltd., at Billingham, is almost ready for production and it is stated that both coal and low temperature tars will be the raw materials. The company is also reported to erect a hydrogenation plant in Scotland in the Grangemouth district. Low Temperature Carbonisation Ltd., had a more successful year, and a dividend of 3 per cent. on the ordinary capital has been recommended. This is the first dividend paid by the company which was made public in 1919.

It is something more than a rumor that an American company intends to erect works in this country to produce alcohol by the fermentation of molasses. Some 15 engineering firms have been asked to quote for plant, with tanks capable of holding 1,250,000 gallons of alcohol. Presumably the chief outlet would be as motor fuel.

The nationalistic tendencies of fuel and oil production are proceeding in the creation of several new companies, some with new processes. Herbert Green & Co., Ltd., has been formed to exploit the Duosol process, producing high class lubricants by solvent extraction. Coal & Allied Industries Ltd., will develop a new process for the treatment of coal in oil media. Chlorination is stated to be one of the processes involved. Although by far the greatest research on petroleum has been made in the United States and Russia, we are now seeing certain new products on the British market sold by British firms. Naphthenic acid is now on the market. It is being converted into cobalt, lead, manganese and copper salts. The first three compounds are fairly well-known as paint driers and are in many respects superior to resinates and linoleates. The copper salt is being marketed under the name of Cuprinol for the treatment of wood against decay, and as an insecticide as a solution in hydrocarbon oil. An attempt is being made to market sulphonic acids of petroleum and shortly new emulsifying agents, the sodium salts of the sulfuric esters of the higher fatty alcohols will appear.

The number of resins from new raw materials, especially polyphenols, has increased. Among the most valuable work is at the Teddington research laboratories, which in part has consisted in ascertaining what low

temperature tar is. A great number of chemical individuals have been isolated in the pure conditions, among them methyl and ethyl phenols and xylenols. The latest news from Teddington, a sensational paper by Holmes and Adams last month before the Society of Chemical Industry, concerns the fact that although synthetic resins, especially those made from polyphenols, are extremely inert to caustic soda for example, nevertheless some reaction, at present not understood, does take place. For example, many such resins, *e.g.*, those from resorcinol, catechol, tannins, etc., in the powder form and used as a filter bed are apparently able to remove the cation from solutions of salts, hydroxides, etc. Thus the sodium ion is removed from a solution of caustic soda or common salt, calcium is removed from hard water, etc. It was hinted that some resins have a preferential adsorption for some metals, for example, one may preferentially adsorb antimony from a solution containing antimony and arsenic salts. Furthermore, resins from amino-bodies were able to remove the anion from solutions of salts, so that it appears by double filtration we may produce distilled water from salt water. Again the method may conceivably be utilized for softening waters or treating alkaline or acid industrial waste waters, etc. The authors also state that the resins are found to remove B. coli from water infected with it and that the organism is killed by the filtration process.

Imperial Chemical Industries Ltd., has absorbed Croydon Mouldrite Ltd.; and has developed glyptal resins. It is to undertake the production of resins made from amino-compounds. Standard Insulator Co., London, has extended its works at Finchley, while Erinoid Ltd., is commencing a new process for producing "Erinofort." Low Temperature Carbonisation Ltd., announce patents for producing plastics from their waste materials.

General Notes

New chemicals (in the sense that they are new to industry or to this country) are not numerous. Imperial Chemical Industries Ltd., have brought out "See Kay" waxes (chlorinated naphthalenes) which are non-inflammable and have other advantages. The most recent application is an admixture with rubber, for the protection of cable and other electricity-bearing wires. Alloprene, one of the numerous chlorinated rubbers brought on the market recently, is also of I. C. I. manufacture.

Few examples of new chemical plant have come to our notice and those chiefly elaborations from well-known apparatus. The latest to be made of "Keebush" (synthetic resin) is a fan for hydrochloric acid gas, both impeller and casing being made of this very resistant material. Super-Centrifugal Engineers, Ltd., have brought out a new laboratory centrifuge with a very high rate of revolution; stainless steel mills and balls for mills have appeared on the market, admirable for grinding material subject to discoloration. A new small Impulsor emulsifier has been issued with an output of 10-15 gallons per hour. A new type of "Bunsen" burner has been issued by Amal Ltd., which so far has concentrated on carburetors for automobiles. Rhodium plating has been introduced.

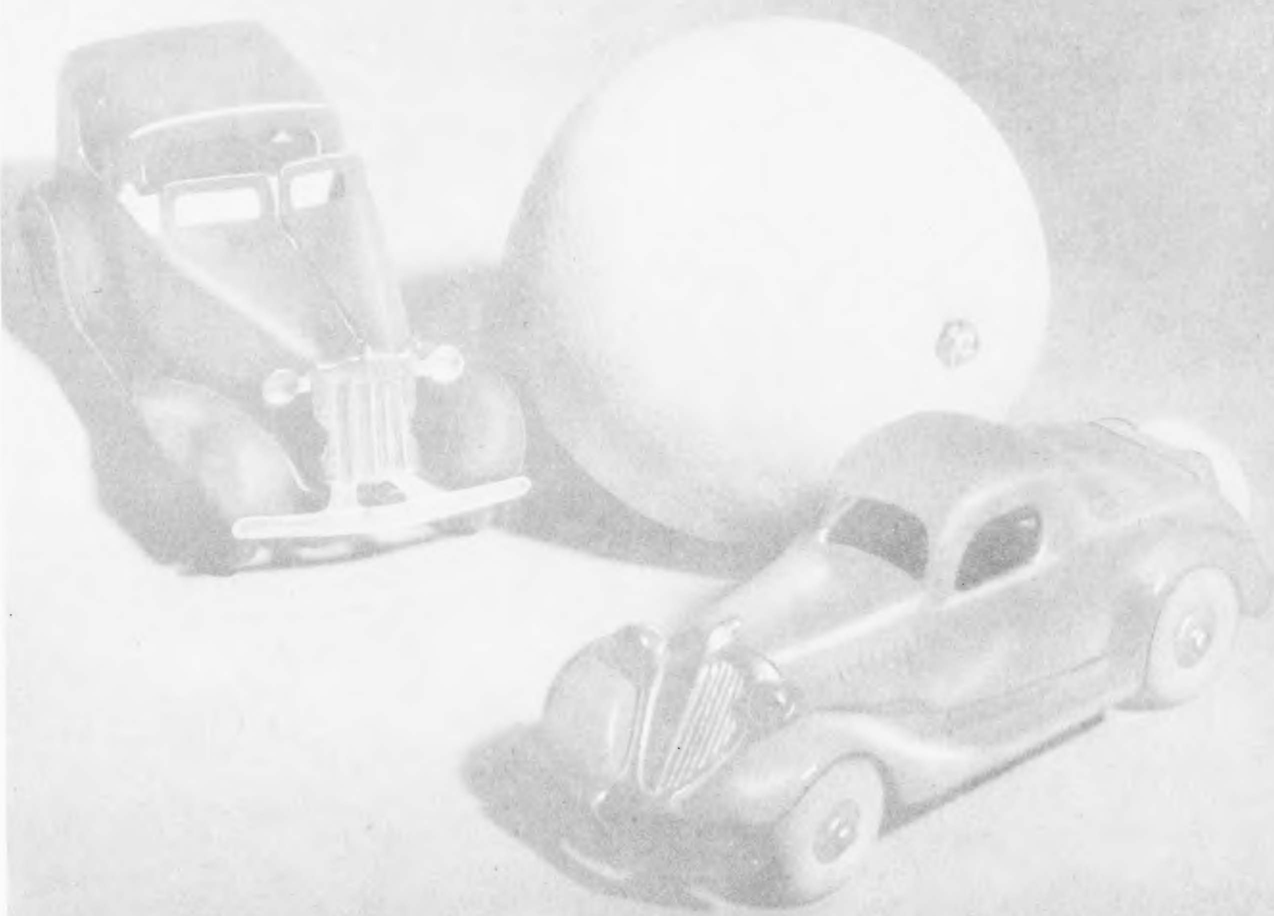
An extremely timely development is announced by the publication of "Tentative Requirements for Fusion Welded Pressure Vessels for Land Purposes," in which we note that X-ray examination of welds is a requirement. This is the first time that such an examination is incorporated in a specification. Incidentally in a new fusion welding shop opened by Messrs. Babcock & Wilcox all finished material is now examined by X-rays.

Activated Carbon Activities

Activated carbon has made marked advance in recent years in the manufacture of solvents. The British Carbo-Union and its associated branches, Carbo-Norit-Union, have erected about 300 plants and are busy at the present time. This firm installed the largest activated carbon recovery plant in the world at Beckton gas works, recovering 22,000 gallons per day. A recent test on one of their carbon plants showed that the cost of recovery including steam, labor, and power was approximately 1½d. per gallon. The efficiency of the plants considered by themselves is usually over 99 per cent. Acticarbone state that 380 plants are in operation and that 25 of these are in Great Britain, mainly for the recovery of alcohol, acetone, ethyl acetate, toluol, benzol, etc. A more recent application is for the recovery of trichlorethylene commonly used in the cleaning industries. Even with the excellent closed systems of cleaning now available there are always losses of vapor. The claim of "Acticarbone" is that their process can start where condensation has separated all the solvent possible by the physical laws of vapor tension. Many plants run efficiently and satisfactorily in numerous industries, and extended publicity by activated carbon makers has made industrialists more alive to the necessity of recovery of solvents.

Cobalt Market

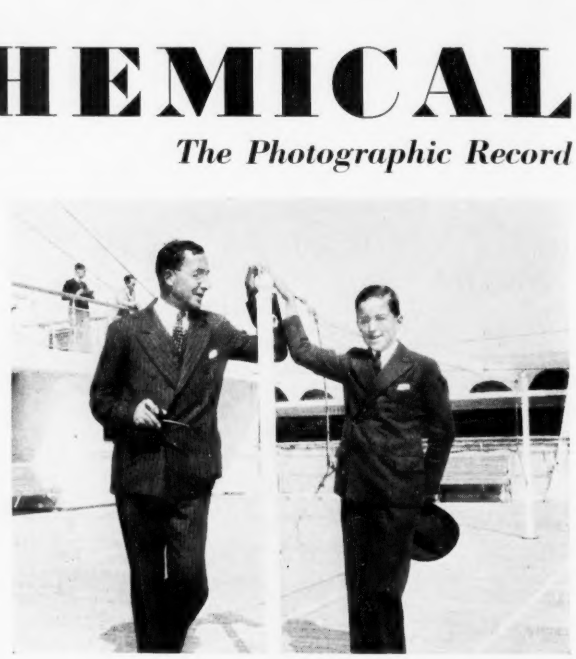
A somewhat serious situation has risen in the cobalt market. For many years production has been 1000-1200 tons per annum from Belgian Congo, Canada and Burma. Northern Rhodesia last year placed another 1000 tons on the market, with the result that the price has dropped. Since there is a limited use of cobalt and its salts (in metallurgy, ceramics, paint and varnish driers), the demand cannot easily be increased. It should pay cobalt producers to initiate research to find other fields. Such work has been very fruitful in results for other metals, *e.g.*, aluminum.



CHEMICAL

The Photographic Record

Photograph of Francis P. Garvan, head of the Chemical Foundation, taken from an oil painting done by Charles Augustus Tack.



Courtesy, Hercules Mixer

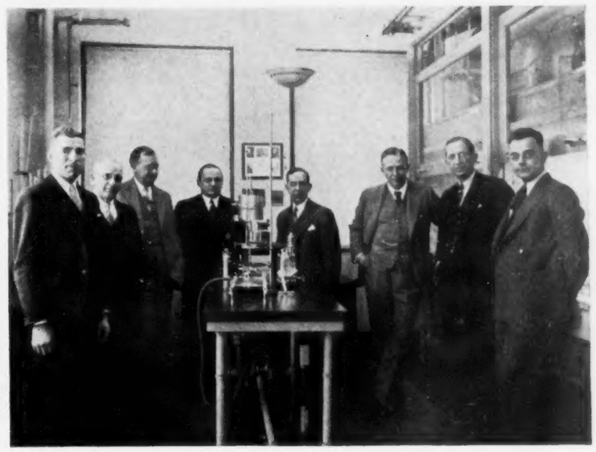
C. A. Higgins, Vice-President, Hercules Powder Company, and his son, C. A. Higgins, Jr., on board the Empress of Britain, bound for England, where the Higgins family spent most of their time motoring through Southern England, and visiting historic spots in London.

Artistic effects in office design are the order of the day and the offices of the Hazard Advertising Corporation are typical of this new trend. The night view at left gives an indication of the open effect created by the tall windows. The photo-panel, part of which is seen over the fireplace just above, completely encircles the room, and represents a cross-section of the general public—those to whom advertising is addressed and intended to influence.

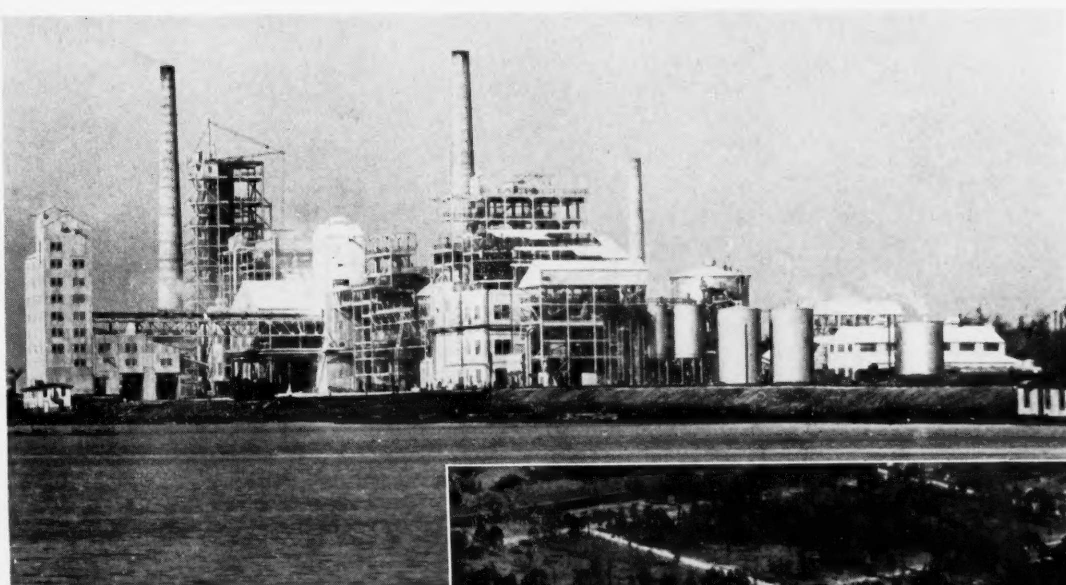
NEWS REEL

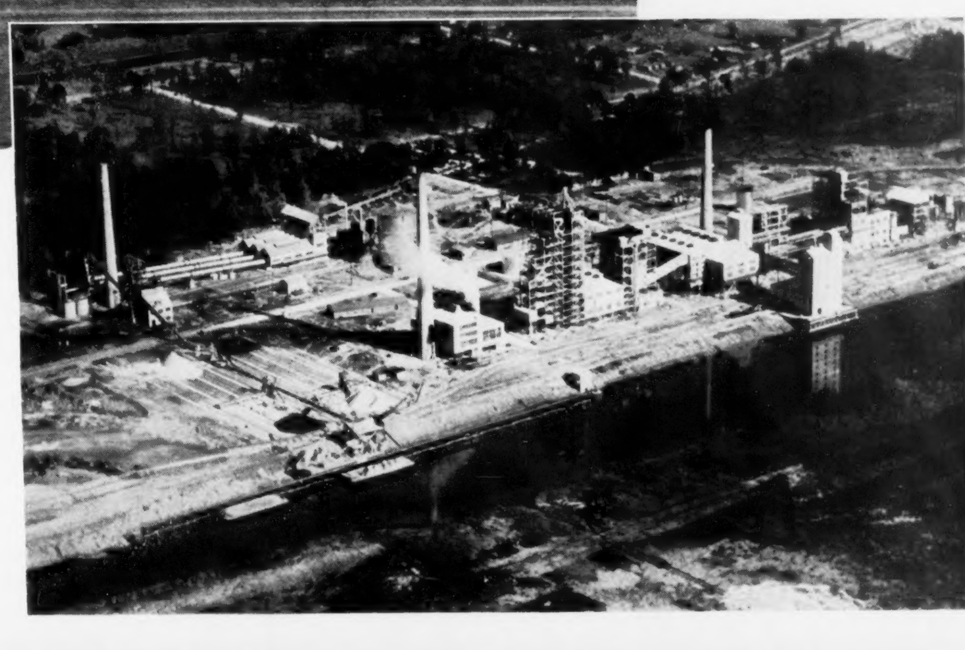
of Our Chemical Activities

Right, interior view of Toxicology Laboratory. Here, new products, before being placed on the market, will be given the most thorough examination in regard to any potential danger which might exist, either to other industries during the process of manufacture or effects on general consumers. Its staff and equipment are the most extensive of any laboratory in the world. Below, exterior view of the Haskell Laboratory of Industrial Toxicology, a new medical research laboratory of E. I. du Pont de Nemours & Company, dedicated last month.



Above group left to right, William Deichmann-Grueber, assistant to Dr. von Oettingen; Ernest B. Benger, assistant chemical director; Dr. A. P. Tanberg, director of the Du Pont Experimental Station; C. C. Ahlum and E. F. Hitch, of the company's Jackson Laboratory; Dr. W. F. von Oettingen, director of Haskell Laboratory; Lammot du Pont, President, and Dr. G. H. Gehrmann, medical director.





Above, close-up view of new Mathieson Alkali plant at Lake Charles, La., from which regular shipments of alkali were begun February 1, following several weeks of experimental operation. Unique engineering advances that reduce labor and handling costs to a new low for alkali manufacture and permit an exceptional degree of quality control are included in the new plant. Transportation facilities at Lake Charles make possible direct loading of barges for inland waterways and coastwise steamers for ocean ports. Right, aerial view of plant.

Chemical Consumption

A digest of new products and processes in process industries for the user of chemicals.

Emulsions: Their Technical Aspects

A symposium on the technical aspects of emulsions, organized by the British Section of the International Society of Leather Trades' Chemists, was held in December at University College and a report of the papers delivered reported in *Nature*.

One paper dealt with the subject of emulsions from the point of view of the patent literature, stressing the modern idea of "balanced" emulsifying agents with lipophile-hydrophile groups, and several patent specifications claiming the use of a preformed emulsion as an emulsifying agent of unusual virtue. The problem associated with the preparation of emulsions for horticultural spraying was another topic. The formation of opposite type emulsions with one pair of liquids and the same emulsifier, the stability to ageing and to subsequent mechanical treatment of the two types in dual systems nears the common phase volume ratio, and the danger to plants arising from the use of these dual emulsion systems were some of the main points discussed.

Emulsions and emulsification in the wood textile industry were the subjects of a paper, the authors of which showed that the ease of removal of thin films of oil from textile fabrics is determined by adhesion phenomena as well as by the magnitude of the oil-water interface.

Various types of agitators, colloid mills and homogenizers used in the production of industrial emulsions, were described. The chief factors influencing the design of homogenizer pump systems and the homogenizing valve were considered and reference was made to two-stage homogenization. Some work was detailed on the effect of the mode of preparation on the dispersion of soap-stabilized emulsions, taking as examples emulsions of (*a*) olive oil with sodium oleate and (*b*) arachis oil and potassium oleate. The results given in the form of size frequency analyses indicate that the dispersion of this type of soap-stabilized emulsion is improved if the soap is allowed to be formed *in situ* during emulsification process.

On the problem of the mechanism of emulsification it was brought out that the stabilizing influence of gases on emulsions produced by ultrasonic waves is most likely a secondary effect, thin layers of gas on the surface preventing or retarding the coalescence of the droplets. Ultrasonic waves acting upon an emulsion (or a coarse suspension) in a thick-walled capillary tube cause striations owing to stationary longitudinal waves in the liquid. In the nodes of these striations large drops are formed, presumably owing to an orthokinetic coagulation of the droplets when traveling from the antinodes to the nodes. It is probable that the facts which are instrumental in the formation and destruction of emulsions by ultrasonic waves are of general importance when producing emulsions by any mechanical means.

The stability of emulsions in thin films with special reference to emulsion paints of the oil-in-water type, was another contribution. The emulsifying agent is absorbed upon the oil-water interface, and the conditions of formation of the interfacial layer determine the ageing effects produced on emulsions. One necessary condition is adsorption in one phase and solution in the other of the emulsifying agent forming the interface, while stability is dependent upon the formation of a tightly packed oriented stable mono-molecular layer.

In reviewing methods of preparing asphaltic bitumen emulsions, it was established that high viscosity emulsions prepared from some bitumens are due to the presence in the bitumen of finely divided water-soluble substances which serve to produce an osmotic equilibrium between the solutions, which they form inside the dispersed bitumen particles, and the bulk aqueous phase without. This work has led to a means of varying the viscosity of such emulsions without changing the bitumen content.

On the subject of emulsions in the leather industry the main point was that the process of fat-liquoring consists of two stages, first the absorption of oil from the dilute emulsion, and the electrical discharge of oil droplets, and, secondly, the breaking of the absorbed emulsion by acid and by basic chromium compounds in the interior of the leather.

Much scientific investigation is still required to elucidate the facts underlying all the commonly used processes for coagulating rubber latex.

Textiles

The new offerings by General Dyestuffs include: Prestabit Oil V, a textile auxiliary with great advantage over other oils used for dyeing and finishing. Has particularly good resistance to organic and inorganic acids, to Epsom and lime salts. Combined with this resistance are excellent wetting-out and penetrating properties. It lends itself to a wide variety of applications and its general adoption by the textile industry seems certain. Use of this product results not only in saving of time and steam, but also to an improved quality of goods. Palatine Fast Claret BN, a new dyestuff, equally clear as and slightly bluer in shade than the old Palatine Fast Claret RN, being distinguished in this respect by leaving vegetable effect threads much whiter. Very suitable as a red component for fashionable shades fast to wear on suitings and ladies dress materials; can also be used for dyeing carpet- hosiery- and knitting yarns.

Diazo Brown 3RBA, a new developed brown, manufactured by General Aniline and offered by General Dyestuff. Dyes in usual way from a salt or Glauber's salt bath, and diazotized and developed with Developer A, full reddish brown shades are obtained; Developer MT or Developer ZA produce yellower browns.

New I. G. products, offered to the trade by General Dyestuff, include: Chromoxane Brilliant Violet RE, a new-chrome-topped violet. Dyed from an acid bath and after-treated with bichromate, produces bright reddish violets of very good fastness to washing and milling, etc. May also be used on silk either chrome-topped or on a chloride of chrome mordant. Brilliant Indocyanine 7BF, a new acid blue, brighter in shade and superior in level dyeing to the old brands 6B and G. Properties of good fastness to washing, water, salt-water, and perspiration make it of special interest to the knitwear trade; has also good affinity for pure and tin weighted silk; wool-silk fibres being dyed a uniform shade.

Patents—Textile

Process purifying bast fibers; subjecting them to joint action of a soluble sulfite and a non-carboxylic fatty detergent. No. 1,983,008. Francis H. Snyder, New York, N. Y., to Francis H. Snyder, Inc., New York, N. Y.

Method of forming spun yarn; by extruding a solution of organic derivatives of cellulose containing finely divided insoluble material through orifices into a setting medium, treating filaments thus formed with a hygroscopic substance. No. 1,983,349. Camille Dreyfus, New York, N. Y.

Viscose solution for delustered rayon yarn; containing titanium dioxide delusterant and chlorinated diphenyl delusterant. No. 1,983,450. Frank H. Griffin, Wawa, Pa., to Viscose Co., Marcus Hook, Pa.

Method protecting artificial silk filaments against injurious action of products formed from the oxidation of drying oils. No. 1,984,139. Theodor Koch, Arnhem, Netherlands, to American Enka Corp., Enka, North Carolina.

Cellulosic spinning solution for manufacture artificial silk; comprising casein and a monocyclic terpene. No. 1,984,304. Gustav Hardt, Elizabethon, Tenn., to American Bemberg Corp., New York, N. Y.

Process water-proofing textiles; by treatment in an aqueous solution of nickel sulfate and an alkali hydroxide, finally treating with a wax-stearine emulsion. No. 1,984,306. Franz Hoelkeskamp, Wuppertal-Barmen, Germany, to American Bemberg Corp., New York, N. Y.

Treatment raw wool for removal of foreign matter of vegetable origin. No. 1,984,794. Howard D. Gordon and Wm. W. Gordon, Hazardville, Conn.

Production fast dyeings on textiles; by application to fiber of an o-amino-anthraquinonylthioglycollic acid and lactamizing this by treatment with dilute mineral acid. No. 1,985,287. Norman Hulton Haddock, Prestwich Park North, Prestwich, and Colin Henry Lumsden, Thornton Gate, Gatley, England, to Imperial Chemical Industries, Ltd., London, England.

Process oiling and dressing fibers; by treatment with a non-coloring condensation product of an alkylol amine with an aliphatic carboxylic acid. No. 1,985,687. Joseph Nuesslein and Heinrich Ulrich, Ludwigshafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Preparation ether-like constituted compound having wetting, dispersing, emulsifying, and washing properties. No. 1,985,747. Adolf Steindorff, Karl Daimler, and Karl Platz, Frankfort-am-Main-Hochst, Germany, to General Aniline Works, Inc., New York, N. Y.

Patents—Dyes

Manufacture azo dyestuffs containing a pyrene nucleus. No. 1,982,977. Alfred Bergdolt, Cologne-am-Rhine, Gerhard Schrader, Opladen, and Martin Corell, Frankfort-am-Main, Germany, to General Aniline Works, Inc., New York, N. Y.

Preparation anthraquinone-selenazoles vat dyestuff. No. 1,983,562. Melvin A. Perkins, Milwaukee, Wis., and Oakley Maurice Bishop, deceased, late of Wilmington, Del., by Eva P. Bishop and Wilmington Trust Company, Wilmington, Del., executors, to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation indigoid vat dyestuffs; compounds dyeing vegetable fibers brown to olive brown shades. No. 1,983,888. Werner Zerweck and Wilhelm Hechtenberg, Frankfort-am-Main, Fechenheim, Germany, to General Aniline Works, Inc., New York, N. Y.

Manufacture mixed chromiferous azo dyestuffs. No. 1,984,096. Fritz Straub, Basel, and Hermann Schneider, Riehen, near Basel, Switzerland, to Society of Chemical Industry in Basle, Basel, Switzerland.

Manufacture yellow mordant dyestuffs as condensation products from a 4- or 3-amino-naphthalene-1, 8-dicarboxylic acid compound and an amino-hydroxybenzoic acid compound bearing the amino group in meta position to the carboxylic group. No. 1,984,110. Ernst Bodmer and Franz Neitzel, Basel, Switzerland, to Durand & Huguenin S. A., Basel, Switzerland.

Preparation dyestuffs of anthraquinone series; dyeing vegetable fibers from a neutral or weakly alkaline bath strong blue to bluish-green shades of excellent fastness properties. No. 1,984,715. Klaus Weinand, Leverkusen-I. G. Werk, and Hans Hertlein, Leverkusen-Wiesdorf, Germany, to General Aniline Works, Inc., New York, N. Y.

Preparation azo dyestuff containing a chrysene nucleus. No. 1,984,722. Alfred Bergdolt, Cologne-am-Rhine, and Albert Schmelzer, Cologne-Mulheim-am-Rhine, Germany, to General Aniline Works, Inc., New York, N. Y.

Preparation an azo dye. No. 1,984,739. Ernest F. Grether and Lindley E. Mills, Midland, Mich., to Dow Chemical Co., Midland, Mich.

Production vat dyestuffs; treating an anthraquinonyl-Bz4-amino-1, 2-benzanthraquinone with a condensing agent. No. 1,984,941. Heinrich Neresheimer, Ludwigshafen-am-Rhine, Germany, to General Aniline Works, Inc., New York, N. Y.

Process for imroving fastness of dyes on materials. No. 1,985,248. George Holland Ellis, Tobias Ockman, and Henry Charles Olpin, Spondon, near Derby, England, to Celanese Corp. of America, Delaware.

Machine for drying and powdering wood waste. No. 1,985,250. Oliver P. M. Goss and Worth C. Goss, Seattle, Wash., to Carlisle Lumber Co., Wash.

Production intermediate product for azo dyestuffs; being generally colorless to yellowish colored amorphous substances, generally insoluble in water, and soluble in organic solvents and aqueous alkalies. No. 1,985,556. Richard Stusser, Cologne-Deutz, Germany, to General Aniline Works, Inc., New York, N. Y.

Process for stabilizing color of naphthas; using ethylene glycol. No. 1,985,613. Gordon McIntyre and Ernest G. Ulbricht, Sarnia, Ont., Canada, to Standard Oil Development Co., Bayways, N. J.

Miscellaneous

Manufacture of linoleum cement, by treating linseed oil with heat and oxygen in the presence of boric acid to produce a solidified oil; then fluxing solidified oil with resinous material to produce a cement, is subject of U.S.P. 1,985,200.

Phosphoric Acid as Latex Coagulant

Experiments on the use of phosphoric acid as a latex coagulant have been reported by the Malayan Department of Agriculture. It is held that phosphoric acid has certain advantages over acetic acid in that any iron present would tend to be precipitated as insoluble iron phosphate, thereby minimizing the chances of oxidation in the resultant product.

Varnish Production

A new method of varnish production, outlined in a German patent, is to heat linseed oil (according to the quality) from 200° to over 300° and simultaneously, or, again depending on the nature of the oil, subsequently to blow air or oxygen into the liquid, so that about 3 cu. m. of air, or the corresponding volumes of oxygen, are used per 100 kg. of oil. In this manner the linseed oil is converted into a product which is solid when cold, and is soluble in hot drying oils or in oil varnishes, for which it acts as a drier.

Patents—Miscellaneous

Paints, Lacquers, Coatings

Preparation novolak resins of the phenolic type; reacting in an aqueous medium not more than 7 effective methylene mols. of a methylene containing agent with 13 mols. of a mixture of resin-forming components. No. 1,982,651. Martin Florenz, Erkner, near Berlin, Germany, to Bakelite Gesellschaft mit beschrankter Haftung, Berlin, Germany.

Process for a synthetic hydrocarbon resin, obtained from an insoluble polymer produced during the reaction of a fraction of cracked petroleum distillate containing diolefines and olefines in presence of a metallic halide catalyst. No. 1,982,708. Charles A. Thomas and Wm. H. Carmody, Dayton, O., to Dayton Synthetic Chemicals, Inc., Dayton, O.

Production cellulose-ether lacquer. No. 1,982,760. Leo Rosenthal, Vohwinkel, near Elberfeld, and Otto Leuchs, Elberfeld, Germany, to I. G., Frankfort-am-Main, Germany.

Manufacture homogeneous coating compositions; using a resinous condensation product which is soluble in a butyl alcohol, a cellulose ester, and a varnish derived from a drying oil capable of forming non-melting films, and a non-volatile softening agent. No. 1,982,881. Wilhelm Pungs and Karl Eisenmann, Ludwigshafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Manufacture anti-rust paint; being a solution in a liquid aromatic hydrocarbon of a cellulose ester of a higher fatty acid, with more than 7 carbon atoms, and a metal salt. No. 1,983,006. Hermann Schladebach, Dessau in Anhalt, and Herbert Hahle, Dessau-Ziebigk in Anhalt, Germany, to I. G., Frankfort-am-Main, Germany.

Process producing non-yellowing baking enamel. No. 1,983,460. Horace H. Hopkins, Springfield, and Francis S. Stewart, Aldan, Pa., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation liquid coating composition containing low viscosity nitrocellulose carried in a vehicle comprising diacetone alcohol, a cracked petroleum viscosity reducer and diluent, and a secondary alcohol homogenizer. No. 1,984,061. Carleton Ellis, Montclair, N. J., to Ellis-Foster Co., Montclair, N. J.

Manufacture plastic paint, comprising a binder and crushed mollusk shells in flake form. No. 1,984,116. Dean de Forest Crandell, Buffalo, N. Y., to National Gypsum Co., Buffalo, N. Y.

Preparation match abrasive paint containing nitrocellulose, red phosphorus, a solvent, and incorporating ferrous sulfate. No. 1,984,316. Rodney S. Pullen, Akron, Ohio, to Pullenite Co., Phila., Pa.

Preparation coating composition; being a solution of an arylsulfonamid-aldehyde resin dissolved in an aqueous alkaline liquid. No. 1,984,368. Henry A. Gardner, Washington, D. C.

Production lacquer; a mixture of high and low viscosity polymerized vinyl esters soluble in a mixture of 4 parts spirit and one part acetic ester. No. 1,984,678. Willy O. Herrmann and Wolfram Haehnel, Munich, Germany, to Chemische Forschungsgesellschaft, m.b.H., Munich, Germany.

Rubber

Process for creaming fresh latex; by incorporation of small amounts of a water-soluble soap and a creaming agent. No. 1,983,703. John McGavack, Leonia, N. J., to Naugatuck Chemical Co., Naugatuck, Conn.

Method making caoutchouc-like material; using starch, water, metallic soap, one or more soluble metallic chlorides and a solvent. No. 1,983,730. Robert Beyer, Brooklyn, N. Y., to Robert Beyer Corp., New York, N. Y.

Method making caoutchouc-like material; using starch, water, soluble metallic chloride, and aluminum palmitate. No. 1,983,731. Robert Beyer, Brooklyn, N. Y., to Robert Beyer Corp., New York, N. Y.

Method converting starch to a caoutchouc-like hydrocarbon; using formaldehyde, a catalyst, and a water-insoluble metallic soap. No. 1,983,-732. Robert Beyer, Brooklyn, N. Y., to Robert Beyer Corp., New York, N. Y.

Method making caoutchouc-like material; using starch, water, and a soluble metallic chloride. No. 1,984,246. Robert Beyer, Brooklyn, N. Y., to Robert Beyer Corp., New York, N. Y.
Apparatus for production solid carbon dioxide. No. 1,984,249. Joseph R. Chamberlain, York, Pa., to York Ice Machinery Corp., York, Pa.
Production rubber composition suitable for tire treads and having high abrasion resistance when vulcanized. No. 1,984,247. Sidney M. Cadwell, Grosse Pointe Village, Mich., to Morgan & Wright, Detroit, Mich.
Method for forming on rubber articles a surface finish ranging from a smooth matte to a coarse granular texture. No. 1,985,002. Douglas Frank Twiss and Edward Arthur Murphy, Wylde Green, and Alfred Niven, Erdington, England, to Dunlop Rubber Co., Ltd., London, England.
Process for manufacture of porous or microporous articles of vulcanized rubber material from aqueous dispersions thereof. No. 1,985,045. Evelyn Wm. Madge, Erdington, and Albert Nelson Ward, Bordesley Green, England, to Dunlop Rubber Co., Ltd., Birmingham, England.
Method compounding rubber; being a solid vulcanized compound composed of rubber stock, a filler, and a flux of stearic acid, paraffin and cumar resin. No. 1,985,261. John J. O'Hare, North Brookfield, Mass., to American Rubber Products Corp., New York, N. Y.

Ores, Metals, Alloys

Manufacture fusible metal, consisting of 10 to 5% mercury and 90 to 95% of the eutectic consisting of lead, tin, cadmium and bismuth. No. 1,982,645. John H. Derby, Scarsdale, N. Y.
Production a hard cemented carbide material, consisting of titanium, tungsten, and tantalum carbides, and cobalt. No. 1,982,857. Gregory J. Comstock, Edgewood, Pa., to Firth-Sterling Steel Co., McKeesport, Pa.
Recovery beryllium; fusing a mixture of a beryllium-bearing ore and lime with a carbonaceous fuel in the blast furnace. No. 1,982,873. Charles James, Durham, N. H., Marion E. James, executrix of said Charles James, deceased, to Skinner & Sherman, Inc., Boston, Mass.
Method removing a large part of the aluminum from an alloy containing upwards of 20% boron, 8% aluminum, remainder of metal of the group consisting of iron and chromium; melting alloy and treating with a sulfide of a metal of group consisting of iron and chromium. No. 1,982,959. August M. Kuhlmann, Niagara Falls, N. Y., to Electro Metallurgical Co., New York, N. Y.
Process for reduction of zinciferous material. No. 1,983,025. Philip M. Ginder and Erwin C. Handwerk, Palmerton, Pa., to New Jersey Zinc Co., New York, N. Y.
Improved production carbamates of the alkali-forming metals. No. 1,983,041. Robert Burns MacMullin and Wesley King McCready, Niagara Falls, N. Y., to Mathieson Alkali Works, Inc., New York, N. Y.
Manufacture bearings; using wax, sericite schist, lead, a phenolic binder, and a solvent. No. 1,983,184. Charles F. Noftzger, Chicago, Ill.
Process recovering values from natural sulfide ores; using dilute sulfuric acid. No. 1,983,273. Theodore Earle, Denver, Colo.
Process recovering metallic values from ore; using dilute sulfuric acid. No. 1,983,274. Theodore Earle, Denver, Colo.
Apparatus for manufacture of filaments, threads, films or the like, by the extrusion of solutions of cellulose or cellulose derivatives. No. 1,983,330. Sidney Arthur Welch, Spondon, near Derby, England, to Celanese Corp. of America, Delaware.
Production refined substantially carbon-free metal from iron, chromium, manganese, and nickel oxide ores in a single operation. No. 1,983,604. John W. Flannery, Portland, Ore.
Apparatus for recovering gold and other precious metals from milled ores and placer material. No. 1,983,701. Frank D. Lewis, Denver, Colo.
Production a magnesium base alloy, containing 0.1 to 15% tin, and 0.1 to 5% manganese. No. 1,983,975. John A. Gann, Midland, Mich., to Dow Chemical Co., Midland, Mich.
Production magnesium base alloy, containing 0.5 to 8.0% silver, balance being mostly magnesium. No. 1,984,151. Roy E. Paine, Cleveland, Ohio, to Magnesium Development Corp., Delaware.
Production alloy containing about 0.5 to 15.0% copper, 0.5 to 20.0% tin, balance being magnesium. No. 1,984,152. Roy E. Paine, Cleveland, Ohio, to Magnesium Development Corp., Delaware.
Manufacture a zinc-coated ferrous article; being a ferrous base having a hot-galvanized coating of zinc, and over that a second zinc coating applied by a different process. No. 1,984,335. Frederick M. Crapo, Muncie, Ind., to Indiana Steel & Wire Co., Muncie, Ind.
Machine for flotation of ores. No. 1,984,366. Arthur William Fahrenwald, Moscow, Idaho.
Process for case hardening ferrous metal articles; by heating to case hardening temperatures in an atmosphere of formamide vapor. No. 1,984,411. Donald Aubrey Holt, Niagara Falls, N. Y., to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Production a strong, wear resistant, cast iron article, consisting in its metallographic structure substantially of pearlite, chrome-ferrite, flake graphite, and temper carbon. No. 1,984,458. Charles O. Burgess, New York, N. Y., to Electro Metallurgical Co., New York, N. Y.
Production a malleable cast iron, consisting in its metallographic structure of pearlite, chromeferrite, and temper carbon. No. 1,984,474. Robert C. Good, Pittsburgh, Pa., to Electro Metallurgical Co., New York, N. Y.
Method cleaning non-ferrous alloys containing copper and other constituents selected from the elements zinc and tin; subjecting alloy to action of a bath of nitric and phosphoric acids. No. 1,984,534. Leonard O. Larsen, Downers Grove, Ill., to Western Electric Co., Inc., New York, N. Y.
Production a machinable stainless alloy casting, composed of iron, chromium, nickel, and carbon. No. 1,984,636. Frank A. Fahrenwald, Chicago, Ill.
Apparatus for electro-deposition of zinc. No. 1,984,745. Karl Kaizik, Breslau, Germany, to Georg Von Giesche's Erben, Breslau, Germany.
Process and apparatus for roasting and sintering pulverulent ores containing sulfur and volatile constituents. No. 1,984,747. Hans Klencke, Frankfort-am-Main, Germany, to American Lurgi Corp., New York, N. Y.
Preparation wurtzite from zinc blende; heating zinc blende with small amount of a compound, crystallizing in the wurtzite lattice but being chemically different. No. 1,984,763. Joachim Rockstroh, Cologne-Deutz, Friedrich Raspe, Leverkusen I. G. Werk, and Heinrich Kircher, Leverkusen-Schlebusch, Germany, to I. G., Frankfort-am-Main, Germany.
Process for reducing lustre of filaments and like materials; comprising cellulose acetate; treating materials at high temperatures with a monohydric phenol. No. 1,984,788. George Holland Ellis and Ralph Charles Storey, Spondon, near Derby, England, to Celanese Corp. of America, Delaware.
Process oxygen cutting of metals by means of a stream of oxygen of velocity greater than 1,000 ft. per second, and pressure approx. atmospheric. No. 1,985,080. John J. Crowe, Westfield, N. J., to Air Reduction Co., Inc., New York, N. Y.

Manufacture welding rod of copper; having as constituent ingredients Sn, Si, Cu, and Zn. No. 1,985,142. Oskar Brandenberger, Zurich, Switzerland.
Apparatus for distillation of metals. No. 1,985,171. Friedrich Johannsen, Magdeburg, Germany, to Fried. Krupp Grusonwerk Aktiengesellschaft, Magdeburg-Buckau, Germany.
Production a bimetallic element; consisting of a nickel-steel alloy having a low coefficient of expansion and a nickel-chromium alloy having a high coefficient of expansion. No. 1,985,181. Howard D. Matthews, Detroit, Mich., to W. M. Chace Valve Co., Detroit, Mich.
Method chromium plating. No. 1,985,308. Oscar Bornhauser, Strasbourg (Bas-Rhin), France, to Societe d'Electrochimie, d'Electrometallurgie et des Acieries Electriques d'Ugine, Paris, France.
Treatment ferrous metals; melting metal in an acidic chamber, removing slag from molten charge, adding to this charge a barium compound from which barium oxide is available. No. 1,985,315. Chambers R. Culling and Malvin A. Baernstein, St. Louis, Mo., to National Pigments & Chemical Co., St. Louis, Mo.
Production an air-hardening steel, which can be readily machined and has high resistance to stress and deformation at high temperature; containing carbon, chromium, molybdenum, tungsten, silicon, copper, and iron. No. 1,985,316. Ralph P. De Vries, Menands, N. Y.
Apparatus for cutting a circular, bevel-edged article from a strip. No. 1,985,356. Paul Van Cleef, Chicago, Ill., to Van Cleef Bros., Chicago, Ill.
Manufacture a magnesium base alloy; being magnesium, tin, zinc, manganese, and silicon. No. 1,985,420. Roy E. Paine, Cleveland, Ohio, to Magnesium Development Corp., Delaware.
Manufacture a magnesium base alloy; using magnesium, tin, zinc, and silicon. No. 1,985,421. Roy E. Paine, Cleveland, Ohio, to Magnesium Development Corp., Delaware.
Manufacture alkylene-oxide derivatives of poly-hydroxylalkyl-alkylamides. No. 1,985,424. Henry Alfred Piggott, Blackley, Manchester, England, to Imperial Chemical Industries, Ltd., London, England.
Method increasing hardness and strength of steel having a carbon content of 0.4% or less. No. 1,985,456. Geo. F. Nelson, Berkeley, Cal.
Method feeding a mixture of black liquor, air and sodium sulfate to a smelting furnace. No. 1,985,504. Alfred G. Kernin, Mosinee, Wis., to Mosinee Paper Mills Co., Mosinee, Wis.
Production cast iron; being a preparation of molten iron practically free from graphite nuclei. No. 1,985,553. Wolfram Ruff, Breslau, Germany.
Manufacture coated wire cloth; a composition containing organic derivatives of cellulose and at least one halogenated aliphatic phosphoric ester selected from the tribromethyl phosphate trichlorbutyl phosphate group. No. 1,985,771. Arthur Eichengrun, Charlottenburg, Germany, to Celanese Corp. of America, Delaware.
Production aluminum plated zinc sheet. No. 1,985,784. Franz Jordan, Berlin-Charlottenburg, Germany.
Manufacture copper base alloy; consisting of tin, copper, iron, lead, nickel, vanadium, tungsten, molybdenum, treated while in a molten condition by the addition of potassium cyanide, arsenic, and phosphorus. No. 1,985,814. Robert F. Bolam, Tampa, Fla.
Preparation electron emissive cathode; comprising a nickel core in solution therein a compound of nickel, barium, and oxygen. No. 1,985,855. Donald V. Edwards, Montclair, and Earl K. Smith, East Orange, N. J., to Electrons, Inc., of Delaware, Delaware.

Paper

Production pulp and treatment residual liquors, etc. No. 1,983,789. Linn Bradley, Montclair, N. J., and Edward P. McKeefe, New York, N. Y., to Bradley-McKeefe Corp., New York, N. Y.
Apparatus and method for production pulp. No. 1,983,793. Thomas L. Dunbar, Watertown, N. Y., and Geo. E. Fulton, Masson, Que., Canada, to Chemipulp Process, Inc., Watertown, N. Y.
Manufacture paper; containing filler whose principal ingredient is calcium sulfite. No. 1,984,188. Gerald Haywood, Westernport, Md., to Industrial Chemical Sales Co., Inc., New York, N. Y.
Apparatus for mechanically refining an aqueous fiber suspension or pulp. No. 1,984,869. Francis S. Farley and Roger B. Brown, Trenton, N. J., to Lionel M. Sutherland, Lower Makefield Township, Pa.
Production a duplex waterproof paper having a non-tacky surface. No. 1,984,910. Edward H. Angier, Framingham, Mass., assignor to Edward H. Angier, as trustee, Framingham, Mass.

Specialties

Manufacture an adhesive containing, as a saponifying agent, a caustic alkali, and as adhesive agent a substance selected from the group: dextrinized starch, gum arabic, gum senegal, gum tragacanth, and shellac. No. 1,983,650. Herbert J. Wolfe, Castleton-on-Hudson, N. Y., to Fort Orange Paper Co., Castleton-on-Hudson, N. Y.
Manufacture linoleum cement; using linseed oil, oxygen, boric acid, and a resinous material. No. 1,985,200. Robert D. Bonney and Walter S. Egge, Glen Ridge, N. J., to Congoleum-Nairn, Inc., New York, N. Y.
Preparation moldable composition for flooring tile; a binder of paracoumarone resin and gelled Chinawood oil, and a filler including asbestos fibre and pigments. No. 1,985,201. Robert D. Bonney, Glen Ridge, and James F. Maguire, South Orange, N. J., to Congoleum-Nairn, Inc., New York, N. Y.
Manufacture glue; comprising a watery dispersion of soya bean flour, a jelling agent, and a jell-stabilizing agent; jelling agent being selected from group of aldehydes and carbon disulfide. No. 1,985,631. Glenn Davidson, Charles N. Cone, Irving F. Laucks, and Harry P. Banks, Seattle, Wash., to I. F. Laucks, Inc., Seattle, Wash.
Composition for improving flavor of smoking tobacco; mixture of colloids, one of colloids being bentonite. No. 1,985,840. Samuel S. Sadtler, Erdenheim, Pa.

Tanning

Manufacture water soluble condensation products from insoluble phenol-formaldehyde-urea resins, serving as tanning or wool reserving agents, mordants or the like. No. 1,982,619. Fritz Becherer, Riehen, near Basel, Switzerland, to J. R. Geigy, S.A., Basel, Switzerland.
Method of depilating or dehairing hides; by subjection to a bath of bacterial enzymatic liquor produced by growing under sterile culture conditions aerobic spore forming bacteria containing formaldehyde and pine oil. No. 1,985,267. Leo Wallerstein, New York, and Julius Pfannmuller, Stapleton, N. Y., to Wallerstein Co., Inc., New York, N. Y.
Method chrome tanning leather; by application to hide of the potassium salt of diphenyloldimethylmethane mono sulfonic acid; hide having been previously treated with a partially basic chromic salt. No. 1,985,439. Thomas Blackadder, St. Davids, Pa., to Rohm & Haas Co., Phila., Pa.
Process for treating hides; drenching them with a ferment preparation obtained principally from the pylorus attachments of fish. No. 1,985,661. Hans Kogl, Chemnitz, Germany, to H. Th. Bohme Aktiengesellschaft, Chemnitz, Saxony, Germany.

Manufacture printed leather; applying a liquid cellulosic color-holding base to surface of tanned skin; printing thereon with a pigment carried in a casein medium; finally finishing surface of skin by a glazing operation. No. 1,985,675. Peter A. Blatz, Westover Hills, Del.

Cellulose

Method preservation vegetable cellulosic material; mixing creosote and acetone, dissolving about 1% mercuric chloride in mixture, impregnating cellulosic substance with resulting product, finally evaporating the acetone. No. 1,983,248. Carl H. Siever, Oak Park, Ill.

Manufacture a flexible, non-greasy and substantially permanently moistureproof laminated wrapping material; using a wax substance. No 1,983,520. William Hale Charch, Buffalo, and Theron G. Finzel, Kenmore, N. Y., to Du Pont Cellophane Co., Inc., New York, N. Y.

Production sheets or films of regenerated cellulose of uniform moisture content. No. 1,983,529. Jacques Edwin Brandenberger, Neuilly-sur-Seine, France, to Du Pont Cellophane Co., Inc., New York, N. Y.

Continuous method preparing purified sheets or films of regenerated cellulose; using viscose solution prepared from green alkali cellulose. No. 1,983,531. Jacques Edwin Brandenberger, Neuilly-sur-Seine, and Charles Victor Emmanuel Duplessis, Courbevoie, France, to Du Pont Cellophane Co., New York, N. Y.

Method laminating a sheet or film of regenerated cellulose to similar or other materials; using a non-aqueous adhesive for laminating purposes. No. 1,983,870. Ulrich Ostwald, Wiesbaden-Biebrich, Germany, to Du Pont Cellophane Co., Inc., New York, N. Y.

Production laminated material having at least one lamina consisting of a moistureproof sheet or film of regenerated cellulose secured by a water-insoluble adhesive to the adjacent lamina, the laminae being substantially coextensive. No. 1,983,875. Karl Edwin Prindle, Cleveland, Ohio, to Du Pont Cellophane Co., Inc., New York, N. Y.

Manufacture water-repellent papers or paper articles sized with wax dispersions. No. 1,983,918. Oscar F. Neitzke, Belmont, Mass., to Bennett, Inc., Cambridge, Mass.

Process making a cellulose nitrate acylate; by treating cellulose in a liquid bath of an aliphatic acid anhydride and a nitrating agent selected from the group of NO_2 or N_2O_4, N_2O, and N_2O_5. No. 1,984,126. James T. Fuess and Cyril J. Staud, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Production hydrolyzed cellulose acetate from an acetylation bath containing cellulose acetate, acetic acid, and an inert organic liquid which with lower aliphatic alcohol will dissolve cellulose acetate. No. 1,984,147. Carl J. Malm, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Manufacture a cellulose filament, containing a phosphor-protein, oleic acid, and triethanolamine. No. 1,984,303. Gustav Hardt, Elizabethton, Tenn., to American Bemberg Corp., New York, N. Y.

Production a non-curling sheet formed of a higher organic ester of cellulose, at least one surface of which is superficially hydrolyzed. No. 1,984,416. James G. McNally and Norman F. Beach, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Manufacture articles from cellulose derivatives of the higher fatty acids. No. 1,984,477. Max Hagedorn and Eugen Guhring, Dessau in Anhalt, Germany, to I. G., Frankfort-am-Main, Germany.

Production transparent materials; treating soft cellulose-containing material with sulfuric acid. No. 1,985,124. Ernst Weiss, Wattwil, Switzerland, to Heberlein Patent Corp., New York, N. Y.

Treatment nitrocellulose-containing waste materials to recover solvents and plasticizers of such materials and to obtain nitrocellulose in an altered form, especially suitable for yielding solutions of low viscosity. No. 1,985,347. Paul Charles Leon Havemal, Brussels, Belgium.

Process for digestion of vegetable growths to secure cellulose fibre; subjecting growths to action of oxides to nitrogen; then to mechanical beating. No. 1,985,609. Herman B. Kipper, Accord, Mass.

Agricultural Chemicals

Preparation insecticide for eradication of earth worms; being a water dispersible emulsion containing a toxic agent and a material having relatively little toxic value. No. 1,982,909. Wesley P. Flint and George L. Hockenyos, Urbana, Ill., to Monsanto Chemical Co., St. Louis, Mo.

Method stimulating plant growth by injecting liquid chloropicrin into and beneath surface of soil. No. 1,983,546. Maxwell O. Johnson, Wahiawa, Territory of Hawaii, to California Packing Corp., San Francisco, Cal.

Production of a lead arsenate, readily wettable by water; through use of a medium boiling petroleum distillate in an aqueous suspension of lead arsenate. No. 1,984,305. Oscar Fred Hedenburg, Pittsburgh, Pa., to Grasselli Chemical Co., Cleveland, Ohio.

Preparation fungicide; impregnating materials liable to be attacked with a nitro-naphthalene. No. 1,985,597. William S. Calcott, Pennsgrove, N. J., and Melvin O. Foreman, Oakharbor, Ohio, to E. I. du Pont de Nemours & Co., Wilmington, Del.

Company Booklets

C324. "Bakelite Information." The Bakelite Corp., 247 Park ave., N. Y. City. Describes how Bakelite Resinoid bonds increase opportunities for the plywood industry.

C325. "The Chemist Analyst." The J. T. Baker Chemical Co., Phillipsburg, N. J. Research and control chemists find new analytical methods, short cuts and worthwhile suggestions in every issue of this valuable booklet. Items are contributed by chemists from all parts of the country.

C326. "Chemical Materials for Industry." The Barrett Co., 40 Rector st., N. Y. City. A new booklet lists the complete list of industrial chemical products offered by this company, including tar acids, naphthalene, resins, rubber compounding materials, coal tar bases, tanning materials, pickling agents and inhibitors, light oil distillates, flotation reagents, cements, paints, nitrogenous materials, etc.

C327. "Nitrogen Solution 11." A brand new booklet presents to the fertilizer trade for the first time a new compound for the ammoniation of superphosphate and triple superphosphate. New product contains a high proportion of ammonium nitrate in a readily usable and safe form.

C328. "Latest Emulsion Practices." The Beacon Co., Malden, Mass. A most valuable booklet, containing page after page of practical formulas showing the use of the well-known Beacon line of emulsifying agents and emulsion specialties. Chemical manufacturers with emulsion problems or dealing with emulsions in their processes should write for a copy.

C329. "Calcene Data Sheets V." The Columbia Alkali Corp., Barberton, Ohio. A series of data sheets showing results obtained in further work on Calcene as a compounding ingredient in various types of rubber stocks.

C330. "Products of Commercial Solvents." Commercial Solvents Corp., Terre Haute, Ind. If you use solvents you should have this newly revised booklet giving the chemical and physical specifications, uses, shipping containers, etc., of the long list of important solvents produced by this company synthetically from corn by its patented process of fermentation.

C331. "Alcohol." Commercial Solvents Corp., Terre Haute, Ind. A brand new booklet describes the various alcohols produced by Rossville Commercial Alcohol, a Commercial Solvents subsidiary. In addition, it gives in complete detail the formulas for all of the completely and specially denatured formulas and the authorized uses for each. Lastly, a whole section is devoted to physical and chemical properties and miscellaneous data of special value to all users of alcohol for all purposes. Booklet is an outstanding achievement.

C332. "Alcohol Talks." Commercial Solvents Corp., Terre Haute, Ind. Most appropriately January issue of this monthly bulletin is devoted to alcohol and your automobile. You will like the literary style of the booklet.

C333. "The Pioneer." Electro Bleaching Gas Co. and Niagara Alkali Co., 9 E. 41 st., N. Y. City. We welcome the latest house-organ and recommend that chlorine, alkali and carbonate of potash users permit this column to register them as regular subscribers. Of course, there is no charge.

C334. "Chemicals by Glyco." Glyco Products Co., 949 Broadway, N. Y. City. For quick reference and facility of reading, the catalogue has been divided into sections, each section devoted to a particular class of products such as emulsifying agents, synthetic resins, synthetic waxes, solvents, specialty emulsions, etc. An interesting article on emulsions and their manufacture will be very helpful in view of the evergrowing importance of emulsions in the chemical industry. Indicated formulae, illustrating the practical use of various items described, help to make the catalogue a handy little reference book which no chemical or technical worker should be without.

C335. "Du Pont Duprene—A Story of Man-Made Rubber." This is the first really popular description of du Pont's new synthetic rubber. Of particular interest is the clear and understandable explanation of how DuPrene is synthesized from such abundant natural raw materials as coal and limestone. Other phases of the general subject of the booklet include "'DuPrene' Is Processed by Rubber Machinery,"—"Many Kinds of DuPrene Compositions,"—"Costs More Than Natural Rubber,"—"Special Properties,"—"Many Industrial Applications," and "Engineering Service."

C336. "Quarterly Price List." E. I. du Pont de Nemours & Co., Wilmington, Del. Besides listing important price changes the latest edition of the *Quarterly* gives valuable information on a number of new products and particularly the new solvent beta-trichlorethane.

C337. "The Hercules Mixer." The Hercules Powder Co., Wilmington, Del. January issue relates the story of the Kenvil plant—America's oldest dynamite plant.

C338. "Chemistry and You." Arthur R. Maas Chemical Laboratories, Los Angeles, Calif. Each month this interesting leaflet reports on what is news and how a laboratory and chemistry are making money for industrial firms.

C339. "January-February Catalogue." Magnus, Mabee and Raynard, 32 Cliff st., N. Y. City. Lists several price changes.

C340. "Laboratory Gases No. 11." The Matheson Co., East Rutherford, N. J. Price list and other pertinent data on the complete Matheson line of industrial and rare gases.

C341. "Price List—January." Mallinckrodt Chemical Wks., St. Louis, Mo.

C342. "Merck Chemicals." Merck & Co., Rahway, N. J. January price list.

C343. "The Merck Report." Merck & Co., Rahway, N. J. This issue contains a noteworthy article on "The Production, Packaging and Distributing of Fine Chemicals."

C344. "Dyestuffs." National Aniline & Chemical Co., 40 Rector st., N. Y. City. December issue features "The Analytical Evaluation of Textile Starches"; each month this organ reproduces worthwhile articles from leading textile, tanning and color journals.

C345. "The Dutch Boy Quarterly." The National Lead Co., 111 Broadway, N. Y. City. A booklet edited for the large paint user, containing practical and technical discussions of paint materials, lead and related products; contains a feature article on "How to Use Paint Properly."

C346. "Retorts." Rolls Chemical Co., Ellicott Square Bldg., Buffalo, N. Y. This ever interesting house-organ contains information for the user of chemicals in the N. Y.-Pennsylvania-Ohio area.

C347. "P's & Q's." Philadelphia Quartz Co., 121 S. 3rd st., Philadelphia, Pa. January issue discusses sodium sesquisilicate (Metso) and pH.

C348. "Oil-Ways." Esso, Inc., 26 Broadway, N. Y. City. The December issue contains a most instructive article on the Merrimac Chemical plant. This monthly contains a wealth of valuable hints on lubrication for the plant managers and plant superintendents. This column will be glad to see that your name is added to the regular mailing list.

C349. "Solvesso-Hydrogenated Naphthas." Stanco, Inc., 2 Park ave., N. Y. City. A new booklet gives the physical and chemical properties of the new solvents made from petroleum by hydrogenation. Of special interest to the lacquer, synthetic resin, paint and rubber fields.

C350. "Witcombings." Wishnick-Tumpeer, Inc., 251 Front st., N. Y. City. The user of chemicals will find this comparatively newcomer in the house organ field most interesting, instructive, amusing. If you employ chemicals of any kind you are eligible to a life subscription and this department will attend to all the details.

C351. "Tornesit." Hercules Powder Co., Wilmington, Del. A 24-page booklet gives authoritative data on the new chlorinated rubber, known as "Tornesit."

C352. "Metso 99." Philadelphia Quartz Co., 121 S. 3rd st., Philadelphia. The first printed material on the interesting new industrial alkali, sodium sesquisilicate.

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Chemical Production

A digest of plant management, design, equipment and containers for the makers of chemicals

Magnesium Perchlorate—Its Properties as a Drying Agent

By Dr. J. G. F. Druce

THE pronounced dehydrating properties of magnesium perchlorate, $Mg(ClO_4)_2$ appear to have first been utilized in 1924 by Smith, Brown, and Ross,[1] who used the trihydrate to absorb water in certain combustion and steel analyses. It was found to be as suitable for the purpose as any drying agent previously used for absorbing water vapor in such analytical work.

Soon after, Lee and Brown[2] showed that the trihydrate, $Mg(ClO_4)_2 3H_2O$ was equally suitable for the gravimetric determination of small amounts of water in biochemical work. Later, Lehner and Taylor[3] pointed out that the anhydrous salt was even better than the trihydrate as a desiccating agent, since it could absorb still more water before becoming spent.

Barium perchlorate has also been suggested as a suitable dehydrating agent, and when prepared for this purpose Smith[4] assigned it the name "Desicchlora." A mixture of barium and magnesium perchlorates has also been patented[5] for the same object, but the barium salt does not absorb nearly as much water as the magnesium compounds. It is also slower and not so powerful in its dehydrating action; moreover, unlike the magnesium salts, it is said to absorb ammonia.

A comparison of a number of drying agents was made in 1925 by Yoe,[6] who mentions incidentally that both anhydrous magnesium perchlorate and the trihydrate are efficient and have a number of advantages over most other substances in general use. A similar comparison by Moles and Roquero[7] led these authors to the conclusion that the trihydrate was not a definite compound but a mixture. This has not been confirmed.

History and Method of Preparation

Magnesium perchlorate was prepared as the crystalline hexahydrate by Serullas[8] over 100 years ago. In 1914 Weinland and Ensgraber[9] made it again from the oxide and perchloric acid which is now available technically as the acid of 72% strength, but these authors did not examine its properties. When prepared in this manner or by the interaction of barium perchlorate and magnesium sulfate solutions, the resulting crystals are separated from the mother liquor by centrifugal action.

The hexahydrate is very soluble in hot water, but crystals readily separate when hot concentrated solutions are cooled. The crystals are stable in air and are only very slowly converted into the trihydrate by standing over phosphorous pentoxide. The salt melts at about 145° C., water being lost while the porous trihydrate remains.

The trihydrate, $Mg(ClO_4)_2 3HO$, is known as dehydrite and is stable up to 250° C. This salt is not appreciably dehydrated further by phosphorus pentoxide, which it almost equals in desiccating power. In some respects it is preferable to the pentoxide for general use. Thus, it does not become sticky when exposed to air, nor does it cling to the sides of the tubes, etc., during insertion before use. Moreover, it can be used until it has absorbed as much as 20-25% of its weight of water. Theoretically it should absorb 18% of water to form the hexahydrate, actually it may absorb much more than this.

When the deliquesced product is heated to 140° C. water is again driven off. This re-generation of the salt is facilitated by heating *in vacuo.* Since magnesium perchlorate is readily soluble in water, vessels that have contained it are quickly cleaned.

The suggestion that there are also compounds containing 2 and 4 molecules of water of crystallization has been made by Smith, Rees, and Hardy.[10]

The anhydrous salt technically known as "Anhydrone" is obtained as a porous, amorphous, white powder when the trihydrate is heated to 200-250° C. for some hours. On heating above 400° C. the anhydrous salt loses oxygen and oxides of chlorine, leaving magnesium chloride with much oxide.

Effectiveness as a Drying Agent Compound

As a drying agent the anhydrous compound is found to be as effective as phosphorous pentoxide. When exposed to the atmosphere it continues to gain in weight even after complete deliquescence, increasing to more than double its original weight. When a current of damp air is drawn through U-tubes of the anhydrous perchlorate and of calcium chloride the former reagent effectively removed all moisture, whereas traces escaped absorption by the latter, as shown by its subsequent absorption by magnesium perchlorate.

Suggested Uses

The reagent could also be used for drying some organic liquids, including hydrocarbons, ether, and carbon tetrachloride. It does not remove alcohol from ether containing traces of it, but alcohol readily dissolves the salt.

Since, according to Smeets,[11] the heat of hydration of the anhydrous salt is 38,370 cal. while that of phosphorous pentoxide is only 32,400 cal., it is understandable that magnesium perchlorate should be such a powerful desiccating agent and should show advantages over other substances used in drying gases or absorbing water. It absorbs more water per unit than most others and is not subject to the limitations imposed upon the use of acidic or alkaline reagents. It can be re-generated without difficulty, and, bearing this in mind, its cost is not prohibitive. *Chemistry and Industry*, British, Jan. 18, 1935.

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Heavy Chemicals

Technology of Peroxide Manufacture

In a review of recent developments in the technology and application of hydrogen and other peroxides, Dr. Karl Sagstetter, of Berlin, writing in the *Chemiker-Zeitung*, Nov. 21, 1934, states that electrolytic processes for the manufacture of the peroxide, as developed on the Continent, can be divided into 3 main groups.

First, there is the Weissenstein process, exploited by the Osterreichsche Chemische Werke Weissenstein (D.R.P. 199,958, 217,538, and 217,539). In this process the persulfuric acid produced by electrolysis is directly distilled in vacuo, with the formation of hydrogen peroxide and sulfuric acid. The 2nd process is that developed by Pietzsch and Adolf, and developed by the Elektrochemische Werke of Hollriegelskreuth, near Munich (D.R.P. 241,702 and 243,366). In this process the ammonium persulfate first prepared is decomposed with potassium bisulfate; the difficulty soluble potassium persulfate produced is removed and decomposed either with sulfuric acid and steam under vacuum conditions. The latest process is the so-called Riedel process which is exploited by the Elchemie G.m.b.H. of Kufstein-Schaftenau (French Patent 634,195). The advantage of this process is that it is continuous. Ammonium persulfate is prepared electrolytically with a high current efficiency and then decomposed under vacuo in special distillation plant, the ammonium bisulfite solution produced being returned to the electrolytic cells.

Considerable investigatory work is now being carried out in Germany on the direct synthesis of hydrogen peroxide from oxygen and hydrogen (D.R.P. 558,431, 547,003, 528,461, 514,172, 508,091, etc.).

No marked developments have occurred in recent years in the manufacture of sodium peroxide, it being still produced by the combustion of metallic sodium in a stream of carefully dried air. Probably the only important innovation in technology has been the introduction of rotary drums of large dimensions by the Deutsche Gold und Silber Scheideanstalt (D.R.P. 453,751).

Two processes are in operation for the manufacture of sodium perborate. The chemical methods depending upon reaction between hydrogen peroxide and sodium metaborate or between borax and sodium peroxide are still employed to a certain extent, for instance, by the Chemische Fabrik Coswig-Anhalt, but the electrolytic method is rapidly acquiring a dominating position. This method is further subdivided into the cathodic and anodic methods, the latter being the one principally employed. It is used, for instance, by the Deutsche Gold und Silber Scheideanstalt (D.R.P. 431,035, 451,344, 381,421, 348,148).

Barium peroxide is obtained by the further oxidation of barium monoxide, the monoxide being produced by the ignition of chemically precipitated barium carbonate at high temperatures. The process starting from barium nitrate is to-day only of historic interest. The production of the oxide from the carbonate demands considerable experience if it is to be successful, as the type of plant, the temperature, the duration of ignition, and the type and quantity of admixed carbon all play important rôles. In Germany, one of the leading makers of barium peroxide is the Chemische Fabrik Coswig-Anhalt G.m.b.H., which employs specially constructed large furnaces heated either by coal or electricity for the ignition of the carbonate. Ignition in crucibles is now practically obsolete. In the oxidation of the barium monoxide, the air must be perfectly free from carbon dioxide and water. *Chemical Trade Journal*, British, Nov. 30, p386.

Patents—Industrial Chemicals

Preparation fluorinated arylamides of 2.3-hydroxy-naphthoic acid. No. 1,982,661. Emmet F. Hitch and Miles A. Dahlen, Wilmington, Del., and Martin E. Friedrich, Carneys Point, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation lime soap grease containing a viscous mineral oil and lime soap of a fatty acid of high molecular weight and a minor proportion of a structure stabilizing oil-miscible solvent. No. 1,982,662. Walter D. Hodson, Chicago, Ill.

Process making acetoanilid; treating aniline with diketene, and recovering acetoanilid from the reaction liquor. No. 1,982,675. George H. Law, So. Charleston, W. Va., to Carbide & Carbon Chemicals Corp., New York, N. Y.

Method polymerizing vinyl naphthalene; by heating it to a temperature above atmospheric temperature and below the point of decomposition of the vinyl naphthalene. No. 1,982,676. Walter E. Lawson, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process revivifying sodium bicarbonate solution, while in storage, to keep it in condition for instant use, through use of solid carbon dioxide. No. 1,982,688. Robert W. Pack, Beaumont, Tex., to Sun Oil Co., Phila., Pa.

Preparation an anti-carburizing compound, containing cupric chloride, oxalic acid, and a lead oxide. No. 1,982,718. Walter G. Wittman, Indianapolis, Ind., ten per cent. to Roger F. Marshall, Indianapolis, Ind.

Process of treating polymerized vinyl chloride, in presence of an organic solvent or swelling agent, with chlorine. No. 1,982,765. Curt Schonburg, Bitterfeld, Germany, to I. G., Frankfort-am-Main, Germany.

Method rendering surfaces containing a derivative of cellulose less tacky; incorporating in surfaces of plastic compositions a solid, insoluble relatively transparent material. No. 1,982,778. Bjorn Andersen, Maplewood, N. J., to Celluloid Corp., Newark, N. J.

Preparation molding composition consisting of a phenyl ester of a saturated aliphatic carboxylic acid containing more than 10 carbon atoms and a potentially reactive phenolic resin. No. 1,982,787. Oscar A. Cherry, Chicago, Ill., to Economy Fuse & Mfg. Co., Chicago, Ill.

Process preparing a synthetic resin; reacting a dihydroxydiphenylmethane dicarboxylic acid, a monobasic carboxylic acid, and glycerol. No. 1,982,788. Oscar A. Cherry, Chicago, Ill., to Economy Fuse & Mfg. Co.

Production of a moldable precipitate; reacting as sole reactants urea and formaldehyde in aqueous solution. No. 1,982,794. Melville C. Dearing, Palatine, Ill., to Economy Fuse & Mfg. Co., Chicago, Ill.

Production urea-formaldehyde reaction product; reacting urea and aqueous formaldehyde solution, and adding gum acacia. No. 1,982,795. Melville C. Dearing, Palatine, Ill., to Economy Fuse & Mfg. Co., Chicago, Ill.

Production urea-formaldehyde reaction product; reacting urea and aqueous formaldehyde in presence of a pH of approx 5. No. 1,982,796. Melville C. Dearing, Palatine, Ill., to Economy Fuse & Mfg. Co., Chicago, Ill.

Treatment fatty materials to stabilize odor and flavor. No. 1,982,907. Eddy W. Eckey, Wyoming, Ohio, to Procter & Gamble Co., Cincinnati, Ohio.

Manufacture an adhesive composed of a polymeric acrylic acid ester. No. 1,982,946. Walter Bauer, Darmstadt, Germany, to Chas. Lennig & Co., Inc., Phila., Pa.

Process producing ethyl alcohol of greater than 95% concentration free from fusel oil. No. 1,982,988. Adolf Gorhan, Liesing, near Vienna, Austria, to Deutsche Gold-und Silber Scheideanstalt vormals Roessler, Frankfort-am-Main, Germany.

Process dehydrating a mixture of water-soluble organic liquids inert to the dehydrating salts used in the process, containing water and ethyl alcohol and substances which will form azeotropic mixtures with water. No. 1,982,989. Adolf Gorhan, Liesing, near Vienna, Austria, to Deutsche Gold-und Silber Scheideanstalt vormals Roessler, Frankfort-am-Main, Germany.

Treatment crude phosphates, using nitric acid as dissolving agent, and depositing lime in the form of a double compound. No. 1,983,024. Antonius Foss, Oslo, Norway, to Norsk Hydro-Elektrisk Kvaelstofaktieselskab, Oslo, Norway.

Manufacture record having sound grooves, using a composition containing a polymerized vinyl ester and a cellulose ester. No. 1,983,030. Willy O. Herrmann, Munich, Germany, to Chemische Forschungsgesellschaft, m.b.H., Munich, Germany.

Production chemical compound consisting of an alkali metal salt of di-amyldithiocarbamic acid. No. 1,983,240. John F. Olin, Dayton, Ohio, to Sharples Solvents Corp., Phila., Pa.

Process purifying sand; using dilute acid. No. 1,983,270. Theodore Earle, Denver, Colo.

Process purifying dry sand or other granular material; by addition concentrated sulfuric acid. No. 1,983,271. Theodore Earle, Denver, Colo.

Sulfur separator, for use in connection with apparatus for purifying gases, such as fuel gas, air, or other gases, from sulfur impurities, such an hydrogen sulfide. No. 1,983,313. Robert Schonfelder, Dortmund-Evving, Germany.

Process manufacturing ammonium salts. No. 1,983,320. Frederick W. Sperr, Jr., Phoenix, Ariz., to Koppers Co. of Delaware, Pittsburgh, Pa.

Machine for making articles of pulp. No. 1,983,324. Geo. W. Swift, Jr., Bordentown, N. J., to Geo. W. Swift, Jr., Inc., Bordentown, N. J.

Manufacture insulation material, comprising chromium oxide (Cr_2O_3), an artificial rubber isomer, and turpentine. No. 1,983,367. Richards H. Harrington, Schenectady, N. Y., to General Electric Co., Schenectady, N. Y.

Process improving quality of commercial sulfur, first step being conversion of sulfur into entirely gaseous hydrogen sulfide. No. 1,983,399.

Charles J. Ramsburg, Edgeworth, Pa., to Koppers Co. of Delaware, Pittsburgh, Pa.

Production olefines; thermally decomposing a hydrocarbon oil, while in contact with surfaces of an alloy containing nickel, chromium, and iron. No. 1,983,415. Chas. J. Strosacker and Harold S. Kendall, Midland, Mich., to Dow Chemical Co., Midland, Mich.

Production cement for acid-proof brick; being mixture of quartz sand and quartz dust with talcum and water-glass solution. No. 1,983,498. Elisabeth Lux, Essen-am-Ruhr, Germany, to Koppers Co. of Delaware, Pittsburgh, Pa.

Manufacture chlorate briquette for blasting; composed of powdered particles of chlorate cemented together by fine crystalline particles of chlorate, forming a solid coherent body of desired porosity. No. 19,494. Reissue Leonid Ivanoff, Helsingfors, and Per Olov Bjorkman, Tainionkoski, Finland.

Process making tetra alkyl lead by the reaction of alkyl chloride and lead monosodium alloy. No. 1,983,535. William S. Calcott, Pennsgrove, and Alfred E. Parmelee, Carneys Point, N. J., and Joseph L. Stecher, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Manufacture acetic anhydride. No. 1,983,541. Harry Hepworth, Cheam, and Fred Davison Leicester, St. Helens, England, to Imperial Chemical Industries, Ltd., London, England.

Production alkyl halides; reacting an alkyl alcohol with a hydrogen halide in presence of a solution of a metal halide catalyst for the reaction. No. 1,983,542. Lee Cone Holt, Edge Moor, and Herbert Wilkens Daudt, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production triaryl phosphates from phosphorus pentachloride, phosphorus pentoxide, and a monohydric phenol, characterized by first reacting the phenol with one of the phosphorus compounds. No. 1,983,588. Howard Adler and Hans Billroth Gottlieb, Chicago Heights, Ill., to Victor Chemical Works, Chicago, Ill.

Method forming impervious carbon articles; impregnating said articles with pitch, resinifying pitch with concentrated sulfuric acid, subsequently baking. No. 1,983,598. Newcomb K. Chaney, Cleveland Heights, and Edwin F. Kiefer, Cleveland, Ohio, to National Carbon Co., Inc., New York, N. Y.

Manufacture colorless synthetic resin; using citric acid crystals, glycerol, methyl violet. No. 1,983,658. Oscar A. Cherry, Chicago, Ill., to Economy Fuse & Mfg. Co., Chicago, Ill.

Preparation beeswax substitutes directly from aliphatic petroleum hydrocarbons; oxidizing hydrocarbons, continuing this reaction until a beeswax substitute having a melting point about 10° higher than beeswax is produced. No. 1,983,672. Jules Labarthe, Jr. and Donald K. Tressler, Pittsburgh, Pa., to Mathieson Alkali Works, New York, N. Y.

Apparatus for producing gas. No. 1,983,687. Arthur C. Wolfe, Mt. Vernon, Ohio to Cooper-Bessemer Corp., Mt. Vernon, Ohio.

Production pure alkali metal pyroarsenate; using arsenious oxide, an alkali metal nitrate and the corresponding alkali metal carbonate. No. 1,983,717. Glenn H. Wagner, Belleville, and Wilburn L. Mowe, Lebanon, Ill., to Aluminum Co. of America, Pittsburgh, Pa.

Preparation basic chromic salt solution; introducing liquid sulfur dioxide into an aqueous solution of a chromic salt, characterized by having a lower sp. gr. than liquid sulfur dioxide, and capable of reacting with the latter to form basic chromic sulfate. No. 1,983,733. Frederick W. Binns, Quincy, Mass., to Virginia Smelting Co., Portland, Me.

Fractionating apparatus. No. 1,983,762. Meinhard H. Kotzebue, Tulsa, Okla.

Carbonizing apparatus. No. 1,983,801. Rudolph J. Hillstrom, Marshfield, Ore.

Gas agitated crystallizing and curing tank. No. 1,983,805. Joseph J. Munson, Houma, and Gilbert L. Pace, Montegut, La.

Apparatus for dehydrating oil and water emulsions. No. 1,983,832. Walter C. Bailey, Norwalk, Cal.

Process for low-temperature carbonization of solid carbonizable material. No. 1,983,943. William W. Odell, Pittsburgh, Pa.

Process polymerizing vinyl chloride; treating the chloride with an oxidizing catalyst of polymerization and a compound selected from the group of formaldehyde, acrolein, unsymmetrical dichlorethylene, trichlorethane, and butadiene. No. 1,983,949. Waldo L. Semon, Cuyahoga Falls, Ohio, to B. F. Goodrich Co., New York, N. Y.

Production hydrogen; passing hydrocarbon gas over highly refractory material in a converter, injecting hydrocarbon into the hot gases issuing from converter, thus producing ethylene in the gas stream, and subsequently removing acetylene from the gas stream by use of the ethylene. No. 1,983,992. Frederic Marinus Pyzel, Piedmont, Cal., to Shell Development Co., San Francisco, Cal.

Process for treating aqueous bituminous dispersions; one step being the addition to dispersions of an alkali salt of an amphoteric element. No. 1,984,023. Hyman Limburg, Amsterdam, Netherlands, to The Patent & Licensing Corp., New York, N. Y.

Process for treating dispersions; first step mixing an aqueous bituminous dispersion with a volatile alkaline reagent and with a potential coagulant brought to active coagulating condition upon evaporation of the volatile reagent. No. 1,984,024. Hyman Limburg, Amsterdam, Netherlands, to The Patent & Licensing Corp., New York, N. Y.

Apparatus for separating constituents of a mixutre of liquids. No. 1,984,057. Bernard Daly Comyn, Glasgow, Scotland.

Production purified disodium phosphate; producing a solution of disodium phosphate by reaction of an acid phosphate with an alkaline sodium compound. No. 1,984,146. Nils Carlson Lindberg, Crete, Ill., to Victor Chemical Works, Chicago, Ill.

Preparation synthetic resin composition; being resinous reaction product of glycerol, phthalic anhydride, a member of the group of drying oils and drying oil acids, litharge, pigment and a solvent. No. 1,984,153. Gordon D. Patterson, Wilmington, and Roy Allen Shive, Bellemoor, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production semi-vitreous earthenware bodies from a mixture of clay and pyrophyllite. No. 1,984,163. Ira Elmer Sproat, Covington, Ohio, to R. T. Vanderbilt Co., Inc., New York, N. Y.

Process purifying air vitiated with mercury vapors; by removing vapors by means of an adsorption agent impregnated with a halogen. No. 1,984,164. Alfred Stock, Karlsruhe, Germany, to Degea Aktiengesellschaft (Auergesellschaft) Berlin, Germany.

Production a new composition consisting of a dry mixture of calcium carbonate, alum, and lime, all in a finely divided state. No. 1,984,173. Charles H. Champion, New York, N. Y., to R. T. Vanderbilt Co., Inc., New York, N. Y.

Production an insulating composition having the properties of fused silica but characterized by improved workability when plastic and decreased brittleness; composition being silica, beryllium oxide, and aluminum oxide. No. 1,984,178. Philip K. Devers, Lynn, Mass., to General Electric Co., Schenectady, N. Y.

Preparation oil-containing material, adding a soap forming fatty acid to an oil, forming an oil-in-water emulsion, intermixing a pigment suspension, then precipitating pigment particles upon oil particles. No. 1,984,182. Albert E. Gessler, Yonkers, N. Y., to Zinsser & Co., Inc., Hastings-on-Hudson, N. Y.

Process for calcining gypsum; removing water of crystallization or combine water from a solid material. No. 1,984,201. William B. Senseman, Los Angeles, Cal., to Raymond Bros. Impact Pulverizer Co., Chicago, Ill.

Electrical make-and-break contact; composition produced by forming a porous mass of silver and a carbide of one of the hard refractory metals molybdenum and tungsten, and incorporating in pores of this mass a binding constituent of silver. No. 1,984,203. George N. Sieger, Indianapolis, Ind., to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Method and apparatus for preventing foaming of liquids. No. 1,984,210. Lewis O. Gunderson, Chicago, Ill., to Electro-Chemical Engineering Corp., Chicago, Ill.

Process lubricating surfaces exposed to high temperatures; by applying an aqueous dispersion of highly viscous bitumen. No. 1,984,214. Moritz Joseph Heitmann, Freital, Germany, to Patent & Licensing Corp., New York, N. Y.

Process for reducing hardness of water. No. 1,984,219. Aage Thorkil Krogh-Lund, Copenhagen, Denmark, to I. Kruger A/S, Copenhagen, Denmark.

Method preserving vegetable fibrous materials; impregnation with a solution adapted to deposit zinc meta arsenite on exposure to atmosphere. No. 1,984,254. Leo P. Curtin, Cranbury, N. J., and William Thordarson, New York, N. Y., to Western Union Telegraph Co., New York, N. Y.

Preparation composition of matter comprising a hydrocarbon aryl mixed ester of a polycarboxylic acid which contains no unsaturated alkyl group. No. 1,984,283. Ebenezer Emmet Reid, Balto., Md., and George L. Schwartz, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation composition comprising pyroxylin and an aryl alkyl mixed ester of a polycarboxylic aromatic acid. No. 1,984,284. Ebenezer Emmet Reid, Balto., Md., and George L. Schwartz, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Manufacture alcohols; treating a halogen derivative of a hydrocarbon, containing an alkyl group to which the halogen is attached, with a bivalent hydroxide of a metal of variable valance of the zinc group. No. 1,194,334. Louis A. Clarke, Fishkill, N. Y., and Leon W. Cook, Roselle, N. J., to The Texas Co., New York, N. Y.

Process treating dry impure sodium carbonate to remove carbonaceous impurities. No. 1,984,342. Henry D. Hellmers, Westend, Cal., to West End Chemical Co., Oakland, Cal.

Process producing vapor phase chemical reactions in a gaseous fluid-stream. No. 1,984,380. William W. Odell, Pittsburgh, Pa.

Apparatus and method for treatment of non-gaseous materials. No. 1,984,381. Davd D. Peebles, Eureka, Cal.

Process of treating by flotation flue dust and the like containing carbonaceous values, metalliferous values and gangue. No. 1,984,386. Frederick Tschudy, Ensley, Ala.

Dispensing and measuring apparatus for viscous substances such as grease. No. 1,984,391. Robert S. Bassett, Buffalo, N. Y.

Preparation an aliphatic cyanhydrin; reacting hydrocyanic acid and a compound of the aliphatic aldehydes and ketones group in cyanhydrin in liquid state in presence of a catalyst. No. 1,984,415. Alexander Douglas Macallum, Niagara Falls, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production artificial masses; acting on a polymeric acrylic acid derivative with an agent containing a reactive hydrogen atom. No. 1,984,417. Hermann Mark, Mannheim, and Hans Fikentscher, Ludwigshafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Liquid for transferring energy and lubricating; practically anhydrous, limpid, homogeneous mixture, consisting of a liquid polyglycol ether and a lubricating oil. No. 1,984,421. Eduard Muench and Hanns Ufer, Ludwigshafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Method making phenolic condensation product; consisting of a potentially reactive resinous phenol aldehyde condensation product including an oxidizing agent. No. 1,984,423. Emil E. Novotny, Phila., Pa., to John Stogdell Stokes, Spring Valley Farms, Pa.

Process for expulsion of nicotine from cured tobacco leaves; subjecting leaves to penetrating alkaline action of ammonia vapor, then exposing them to acidulous action of acetic acid on some heavy fabric. No. 1,984,445. William Wagner, Elyria, Ohio.

Manufacture pentavelent antimony compounds; dissolving SbF_3 in a solvent and interacting solution with a halogen other than fluorine to form SbF_3X_2, where X is the halogen used in the reaction. No. 1,984,480. Albert Leon Henne, Columbus, Ohio, to General Motors Corp., Detroit, Mich.

Process producing pure phosphorus by heat extraction from a raw source having undesirable impurities. No. 1,984,674. Augustus H. Fiske, Warren, and Chas. S. Bryan, East Providence, R. I., to Rumford Chemical Works, Rumford, R. I.

Preparation abietyl esters of sulfopropanediol. No. 1,984,713. Henry J. Weiland and Clyde O. Henke, So. Milwaukee, Wis., and Gastao Etzel, Pennsgrove, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation sulfo-alkyl esters of abietic acids. No. 1,984,714. Henry J. Weiland and Clyde O. Henke, So. Milwaukee, and Milton A. Prahl, Milwaukee, Wis., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Treatment chlorinated isobutane; reacting tertiary-butyl chloride with an aqueous alkaline earth metal hydroxide to form tertiary-butyl alcohol. No. 1,984,725. Edgar C. Britton, Gerald H. Coleman, and Glenn W. Warren, Midland, Mich., to Dow Chemical Co., Midland, Mich.

Production refractory material for application to the hot-tops of ingot molds; consisting of chrome ore, basic slag, magnesite, calcined fire clay, plastic clay, and common fire clay. No. 1,984,759. Bernard J. Patton, deceased, late of Cleveland, Ohio, by Josephine V. Patton, administratrix, Cleveland, Ohio.

Method for controlling froth formation upon liquids undergoing treatment. No. 1,984,789. John Everett, Lyndhurst, England, to Standard Brands, Inc., New York, N. Y.

Process for production Portland cement and pig iron in a blast furnace. No. 1,984,793. Mathias Frankl, Augsburg, Germany, to American Oxythermic Corp., New York, N. Y.

Method and apparatus for dehydrating saline crystals. No. 1,984,833. Clarence W. Jones, Thomas Joseph Murray, and George F. Andersen, Okanogan, Wash.

Preparation an abrasive material, consisting principally of sintered beryllium oxide of a high degree of purity. No. 1,984,841. Reinhold Reichmann, Berlin, Germany, to Siemens & Halske, Aktiengesellschaft, Siemensstadt, near Berlin, Germany.

Preparation an ignition charge for an initiator; charge comprising tetramethylene diperoxide dicarbamide. No. 1,984,846. Charles P. Spaeth, Woodbury, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Apparatus for atomizing heated oil. No. 1,984,851. Alfred O. Vinz, Beaver Dam, Wis.

Gas pressure stabilizer apparatus. No. 1,984,868. George M. Deming, East Orange, N. J., to Air Reduction Co., Inc., New York, N. Y.

Catalytic process of forming organic compounds in a three-component reaction system. No. 1,984,884. Wilbur A. Lazier, Marshallton, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production 1-amino-arylene thiazoles. No. 1,984,885. Herbert August Lubs and John Elton Cole, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production 1-amino-arylene thiazoles. No. 1,984,886. Herbert August Lubs and John Elton Cole, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Apparatus for use with acid cleaning equipment. No. 1,984,899. Charles E. Smith, Creighton, Pa., to Duplate Corp., Delaware.

Manufacture a composite sheet of mica and a binder, and a supporting and covering film for same. No. 1,984,911. William H. Banks, Jr., Boston, and Walter A. Graham, Saugus, Mass., to The Maccallen Co., Boston, Mass.

Manufacture a composition sheet comprising a bituminous fibrous foundation coated with an adhesive composition including rubber, resinous material and an inert filler. No. 1,984,922. Wallace C. Fischer, Chicago, Ill.

Production acetylene from gases, comprising hydrocarbons by electric arc treatment. No. 1,984,957. Paul Baumann, Ludwisghafen-am-Rhine, Robert Stadler, Ziegelhausen, and Heinrich Schilling and Hanns Buckert, Ludwisghafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Method producing an acid sodium pyrophosphate free from metaphosphate; using phosphoric acid with caustic soda. No. 1,984,968. Augustus H. Fiske, Warren, and Charles S. Bryan, East Providence, R. I., to Rumford Chemical Works, Rumford, R. I.

Process for desulfurization of a gas contaminated with hydrogen sulfide and containing more than 7 gms. of sulfur per cubic meter. No. 1,984,971. Paul Herold and Walter Baumann, Leuna, Germany, to I. G., Frankfort-am-Main, Germany.

Refining apparatus for hydrocarbons. No. 1,985,083. Galen B. Finch, Wichita, Kans., one-third to John W. Davisson, and one-third to Ralph D. Jones, both of Wichita, Kans.

Flotation apparatus. No. 1,985,153. Arthur C. Daman, Denver, Colo.

Apparatus for carbureting air. No. 1,985,165. Roswell T. Hapgood, Charleston, W. Va.

Production anhydrous and absolute alcohols. No. 1,985,204. Ralph B. Derr, Oakmont, and Chas. B. Willmore, New Kensington, Pa., to Aluminum Co. of America, Pittsburgh, Pa.

Production anhydrous and absolute alcohols. No. 1,985,205. Ralph B. Derr, Oakmont, Pa., to Aluminum Co. of America, Pittsburgh, Pa.

Apparatus for heating fluid. No. 1,985,215. Paul F. Shivers, Wabash, Ind., to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Manufacture modified bodies from fatty oils; using an alkali metal, an anhydrous alcohol, and a fatty oil. No. 1,985,230. Laszlo Auer, Manchester, England, to J. Randolph Newman, Washington, D. C., as trustee.

Manufacture vulcanized and modified bodies from fatty oils; mixing a fatty oil with a basic modifying agent. No. 1,985,231. Laszlo Auer, Budapest, Hungary, to J. Randolph Newman, Washington, D. C., as trustee.

Preparation compositions from a hardenable phenol aldehyde resinous condensation product and a fatty oil; heating phenolic product substantially in the A state with wood oil in cyclohexanol and in the presence of iodine. No. 1,985,264. Fritz Seebach, Erkner, near Berlin, Germany to Bakelite G. m.b.H., Berlin, Germany.

Process making sodium barium aluminate; using barium and sodium aluminates in intimate association resulting from concurrent production. No. 1,985,318. Elbert E. Fisher, St. Louis, Mo., to National Pigments & Chemical Co., St. Louis, Mo.

Preparation a catalytic mass, composed of a hydrous oxide carrier, impregnated with at least one catalytic material. No. 1,985,343. Gerald C. Connolly and Jeremiah A. Pierce, Balto., Md., to Chester F. Hockley, receiver for The Silica Gel Corp., Balto., Md.

Apparatus and arrangement for transferring gaseous liquids under counter-pressure from a storage vessel, containing liquid under pressure, to bottles. No. 1,985,355. Gustave Stern, Charenton, France.

Preparation a plasticizer; method comprises heating a mixture of glycerin and starch to be applied to a paper product to form a plastic layer, applying over this a layer of greaseproof material. No. 1,985,368. Arthur H. French and Lowell O. Gill, Decatur, Ill., to A. E. Staley Mfg. Co., Decatur, Ill.

Process for decreasing the CO contents of water-gas and of gaseous mixtures containing water-gas. No. 1,985,441. Franz Bossner and Carl Marischka, Vienna, Austria.

Apparatus for lubricating; being a journaled member comprising a lubricant reservoir. No. 1,985,450. Horace C. Holderfield, Nashville, Tenn., forty-nine per cent. to George I. Waddey, Nashville, Tenn.

Preparation purpurin; reacting phthalic-anhydride with p-chloro-resorcinol in a medium of sulfuric and boric acids. No. 1,985,452. Henry R. Lee, So. Milwaukee, and Edwin C. Buxbaum, Shorewood Village, Wis., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation of a dehydrated potentially-reactive resin, of the phenol aldehyde type, direct from a tar distillate. No. 1,985,453. Arthur W. Luedeke, Elizabeth, N. J., to Combustion Utilities Corp., New York, N. Y.

Preparation an alkyl halide; reacting an olefine with a hydrogen halide in presence of a liquid catalyst. No. 1,985,457. Howard S. Nutting, Peter S. Petrie, Donald H. Croope, and Myron E. Huscher, Midland, Mich., to Dow Chemical Co., Midland, Mich.

Process for continuous production of lead oxides in the dry state. No. 1,985,465. Genzo Shimadzu, Kyoto, Japan.

Method protecting a body of volatile oil from evaporation. No. 1,985,491. Gerald M. Fisher, Glendale, Cal.

Method milling diatomaceous earth; roasting crude earth in lump form to produce dehydration, finally reducing earth to form of a powder of fineness suited for use as a filter-aid. No. 1,985,526. McKinley Stockton, Redondo Beach, Cal., to Dicalite Co., Los Angeles, Cal.

Process removing acetylene from a mixed stream of hydrocarbon gases. No. 1,985,548. Daniel Pyzel, Piedmont, Cal., to Shell Development Co., San Francisco, Cal.

Production sulfurized derivatives of phenols; using a monohydric phenol, sulfur, and an alkali metal hydroxide. No. 1,985,602. Frederick B. Downing, Carneys Point, N. J., Richard G. Clarkson, Wilmington, Del., and Chester W. Hannum, Chicago, Ill., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Air cooling apparatus; utilizing carbon dioxide ice. No. 1,985,616. Harry E. Morton, Boston, Mass., to B. F. Sturtevant Co., Inc., Boston, Mass.

Preparation brine solution; of the following composition: KCl 15%; $BaCl_2$ 5%; NaCl 5%; H_2O 75%, when percentages are given by weight. No. 1,985,632. Joseph Fleischer, Dayton, Ohio, to Frigidaire Corp., Dayton, Ohio.

Production a mixed bituminous material to be stored in a granular condition and laid cold, and to solidify upon compression. No. 1,985,718. James F. Carle, Birmingham, Ala.

Manufacture light, nailable bricks; a composition of loam, turf, collodion, and water. No. 1,985,737. Hermann Mayr, Munich, Germany.

Manufacture acetic acid; oxidizing acetaldehyde with oxygen in presence of manganic salt initially added as such. No. 1,985,750. Edward Boaden Thomas, Walter Henry Groombridge, and Horace Finningley Oxley, Spondon, near Derby, England, to Celanese Corp. of America, Delaware.

Production oxygen of high purity. No. 1,985,763. George J. Boshkoff, Buffalo, N. Y., to Linde Air Products Co., New York, N. Y.

Manufacture aliphatic compounds. No. 1,985,769. Henry Dreyfus, London, England.

Preparation catalysts for use in the conversion of terpenes. No. 1,985,792. Hans Meerwein, Marburg, Fritz Ulffers and Rudolf Erbe, Eberswalde, and Franz Aichner and Wolfgang Klaphake, Berlin, Germany, to Schering-Kahlbaum A. G., Berlin, Germany.

Manufacture superphosphate. No. 1,985,810. Edward Hyatt Wight, David L. Anderson, and Wm. N. Watmough, Jr., Balto., Md.

Process for manufacture of aromatic hydrocarbons containing unsaturated side chains. No. 1,985,844. Hermann Suida, Vienna, Austria, to I. G., Frankfort-am-Main, Germany.

Manufacture cement by wet grinding. No. 1,985,868. Ernest J. Maust, New York, N. Y., to The Dorr Co., Inc., New York, N. Y.

Production synthetic resin prepared from the reaction of cyclopentanome and an aliphatic aldehyde. No. 1,985,870. Arthur J. Norton and Lothar Sontag, North Tonawanda, N. Y., to General Plastics, Inc., North Tonawanda, N. Y.

Method treating Montan wax to produce light-colored waxy materials. No. 1,985,871. Wilhelm Pungs, Cologne-am-Rhine, Michael Jahrstorfer, Mannheim-am-Rhine, and Theodor Hellthaler, Granschutz, near Weissenfels, Germany, to A. Riebeck'sche Montanwerke Aktiengesellschaft, Halle (Salle), Germany.

Process oxidizing methane by means of oxygen; heating metahane with a mixture of oxygen and nitrogen in the presence of decomposing nitric oxide and a bleaching earth. No. 1,985,875. Hans Harter, Wurzburg, Germany.

Process preparing ethylene glycol; bringing into contact ethylene, oxygen, and water in the presence of iodine at a temperature above 50° C. and at a superatmospheric pressure. No. 1,982,545. Karl Emil Skarvlom, Lidingo, Sweden.

Process for continuous production of acetic acid by oxidation of acetaldehyde in the liquid phase with oxygen. No. 1,982,559. Karl Wiesler, Constance, Germany, to Deutsche Gold-und-Silber-Scheideanstalt vormals Roessler, Frankfort-am-Main, Germany.

Process for manufacture of a white pigment; adding to a zinc chloride solution a non-volatile alkali metal hydroxide in such an amount that the final pH of the solution is between 12 and 12.8. No. 1,982,604. Rudolf Barfuss, Uerdingen, Germany, to I. G., Frankfort-am-Main, Germany.

Promoting Efficiency by Rationalization

Writing in the *Times Trade and Engineering Supplement* for December, Sir Harry McGowan, chairman of I. C. I., says: Sodium cyanide manufacture at Billingham is a remarkable instance of the advantages of rationalization of industry. Before the formation of I. C. I. the electrolysis of the brine to caustic soda was carried out in Cheshire. The caustic soda was packed in necessarily expensive drums and shipped to Newcastle. The drums were opened, the caustic soda remelted, and the electrolysis to sodium carried out. The sodium was packed in expensive drums and conveyed to Glasgow, and was there remelted and converted to cyanide by means of ammonia from the coke-ovens and gasworks of the Midlands. Now the whole operation takes place in one factory with no intermediate packing and cooling, while the ammonia arrives by a pipe from the ammonia plant.

The only product made at Billingham which is not logically connected with the raw materials available, is, adds Sir Harry, acetic acid. The raw material of this is calcium carbide, which arrives from Norway at the factory wharf. From this acetylene gas is generated, and is caused to combine with water by means of a catalyst, producing a substance known as acetaldehyde. This is treated with oxygen in the presence of another catalyst, and converted direct into acetic acid, which is concentrated by distillation. *Chemical Trade Journal*, British, Dec. 7.

New Equipment

A monthly digest of new equipment of interest to the chemical and process industries.

An Ambidextrous, All-Aluminum Valve

After many years of experimentation with aluminum, a Cincinnati valve manufacturer is now producing an all-aluminum "Y" valve, the design of which this company believes is far superior to any it has furnished so far. There is an increasing demand for the use of aluminum for corrosion prevention in many industries. Valve is primarily of a globe type, yet it affords almost a straightway opening through the valve body. Also, by unbolting the lower half of the body and rotating

through 90° or 180°, an angle pattern can be made from the globe pattern which is quite an advantage in coupling certain types of piping. **QC 210**

Improving Rubber Linings for Tanks

A very definite improvement in rubber linings for tanks used in processing operations employing highly corrosive solutions is announced. New lining is characterized by a high glaze surface which offers greater resistance to acids and alkalies and is more easily cleaned. The outer layer of glazed rubber is securely bonded to a relatively thin inner layer of soft rubber which is in turn vulcanized to the steel tank. This soft rubber lamination provides an elastic contact which compensates for contraction and expansion of metal and rubber during changes of temperature. It also acts as a shock absorber to protect the lining against accident and abuse. Another feature is the use of heavy soft rubber fillets underneath the lining in all corners. The new lining is made of a better rubber compound which is said to offer longer and more efficient service as proved by actual service and laboratory tests. Sample test pieces are offered free to any manufacturer interested. The new lining is being offered at no advance in price. **QC 211**

Portable Potentiometer

A new portable potentiometer has been designed to enable pyrometer users to check their potentiometers, millivoltmeters and thermocouples quickly and accurately. **QC 212**

Seal for Centrifugal and Rotary Pumps

The problem of sealing centrifugal and rotary pumps working gritty and/or corrosive fluids is as old as the invention of the pumps themselves. A new patented seal is offered as the solution. It is unlimited as to the metals and minerals of which it may be constructed. Therefore, it is said, it can be made to resist corrosion by practically any liquid or gas used in industry. Long and effective service is promised on centrifugal pumps and rotary pumps of all types and on valves having stems that rotate and are large enough to take ¼" packing. The flexible metallic or fibrous packings used are stationary in relation to the shaft or stem. This eliminates the wearing of the shaft and stem, a fruitful cause of expensive repairs and much more expensive shut downs. Wear is thrown wholly on the ground joint, which offers less than one-sixth of the friction surface met with in ordinary packing applications. **QC 213**

A Portable Burner

A portable kerosene burner which can be used for wax melting, for heating stills, water jacketed kettles and for hot water boilers up to 50 gallons is now available at a very reasonable cost. In small plants where low pressure steam and hot water are needed this little burner will prove as useful as it will in laboratory work. **QC 214**

New "Cold Test" Apparatus

After considerable experimenting, one of the large recording and controlling instrument manufacturers has designed a 4 compartment "cold test" apparatus to meet the latest A.S.T.M. Cloud & Pour Test specifications (serial D 97-34) for lubricating oils. These specifications require at least 3, and preferably 4, cold test baths which must be maintained at the following temperatures: 1—Temperature +30 to +35° F.; 2—Temperature 0 to +5° F.; 3—Temperature —30 to —25° F.; 4—Temperature —60 to —55° F.

Compartments of this newly designed Apparatus are copper-lined and well insulated with 2-inch cork on sides and bottom, making them separate cooling units. In each compartment there is an assembly of 4 metal jackets, mounted on a substantial metal tripod, for supporting the cold test jars and thermometers in accordance with A.S.T.M. specifications. **QC 215**

Feeding Dry Chemicals

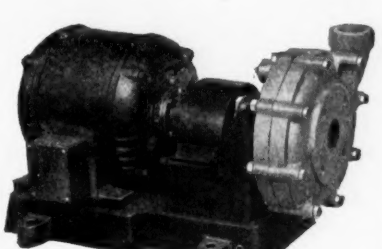
Feeding dry chemicals from a vibrating feeder is reported in the water works and sewerage field. It can be applied with equal effectiveness on packaging equipment or in manufacturing processes. Feeder consists of a non-arching vibrating hopper and vibrating feed trough—the vibration of amplitude of vibration creating, at will, a rapid flow or a slow "creeping" of the lime, alum, sulfate of iron, etc., through the feeder trough. Vibratory pulsations actually cause the chemical to "flow" up-hill through a tube or trough. All orifice controls or speed changes, commonly employed in variable feed mechanisms, have been eliminated. A turn of a rheostat dial regulates the feeder output electrically by changing the intensity of vibrations and thereafter maintaining a constant rate or amplitude of feed trough vibration. Arching in the hopper is prevented and constant flow insured by the separate hopper-vibrator which ceaselessly "taps" down the chemical in the conical hopper. The elimination of moving and wearing parts, orifices that become clogged, motors, bearings, and the like would appear to be the major advantage of the feeder. Feed capacity, according to guarantees, may be varied from 2 ounces to 2000 lbs. of chemical per hour, with a current consumption of but 200 watts per hour. **QC 216**

Special Pumps for Oil Refineries

A large pump maker has just perfected a new line of piston pumps designed particularly for the exacting requirements of the petroleum refiner. The liquid ends are of the side pot type, with minimum clearance, and with removable cylinder liners. Features of paramount importance to both the refiner and the operator are ease of accessibility and the long life and interchangeability of wearing parts. The liquid valves are located in pots on the sides of the cylinder arranged to give stream line flow from suction to discharge. Each valve is accessible independently of the other. The liquid cylinders are compact, and rugged in design, for discharge working pressures up to 500 p.s.i. in Wompco Metal and 700 p.s.i. in cast steel. Chrome alloy valve service and liquid end piston rods, and Ni-Resist cylinder liners are standard fittings. The cast iron pistons may be fitted with either hammered iron or fibrous packing rings as service conditions require. For pumping oils or distillates at temperatures above their flash points, the side pot pumps are fitted with extra deep water-jacketed stuffing boxes. The valve service, cylinder liners, liquid pistons and packing are interchangeable between simplex and duplex pumps of the same bore and stroke. **QC 217**

New Type Centrifugal Non-Corrosion Pump

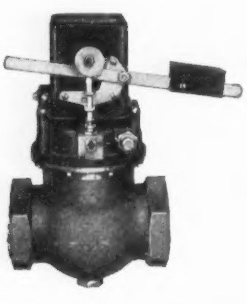
A new pump is offered in the non-metallic field for medium capacities up to 90 gals. per minute at 12 ft. head. Every



feature of the design has been worked out carefully on the basis that ability to handle acids and corrosive chemicals without difficulty is the first requisite. Casing of this pump is made of acid-resisting hard rubber and is also heat and distortion resisting. It is mounted to the base by means of acid-resisting hard rubber covered casting which acts as a chamber to catch drip from the stuffing box. By-pass is adjustable and cored right into back casing. Motor shaft is especially extended, tapered and pinned into the pump shaft with all parts interchangeable. Manufacturer has prepared a folder which gives complete information, capacity chart, etc. **QC 218**

New Slow Opening Gas Valves

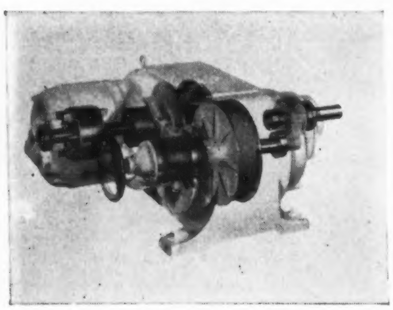
These new types of gas valves were developed to supply the growing demand for a simple and compactly built valve for use where slowness of operation through the opening cycle is required. They are sturdily constructed throughout. Time of opening is approximately 30 seconds and for closing approximately 3 seconds. The motor operates valve through opening cycle and a 50 lb. external spring in holder located alongside of adapter rotates motor backwards to close the valve. The adapter includes an adjustable flare pilot with bypass adjustment for on-off or low-high-low service. The flare pilot valve always opens prior to opening of main gas valve and closes (or adjusts its flame from high to low) after main valve opens. This same action takes place on the closing cycle. Provision is made for separate gas inlet to flare pilot valve from piping ahead of the gas valve if pilot flame has tendency to be smaller than is practical when main valve opens. The damper lever arm as well as the flare pilot are operated from a cam on motor crankshaft. The counter-balance weight on damper arm may be installed on either end of damper lever arm to provide either direct or reverse action of lever arm is required for the installation.



QC 219

New Development in Variable Speed

An improved development in variable speed is announced by one of the electrical manufacturing units. The phantom view, as shown in the photograph, pictures a new lever arm construction developed for the larger horsepower ratings, and to show how the formerly separate units consisting of a constant speed motor, a variable speed device, and a gear case have been built into one compact unit at a great saving in space, in addition to the economy effected due to the elimination of mounting bases and transmissions, such as couplings, fans, and belts between the component parts. Phantom view also shows how the speed change is obtained by the micro-speed control which varies the effective driving diameter of the variable discs. These discs expand and contract for higher and lower speeds, transmitting power through the belt to the take-off shaft. This new motor being self-contained can be conveniently direct connected to machinery. It places at the operator's command any variation of speed, so that the driven machine can be operated at its highest capacity at the will of the operator.



QC 220

The Laboratory

Speeding Up Filtering Operations

It is not revolutionary and perhaps not new to some chemists, that ordinary filtering can be greatly accelerated by the simple expedient of quadruple folding the paper disc. Usual method of filtration is to fold a circular filter paper twice and at right angles then open this cone so that there are three thicknesses of paper on one side and one thickness on the other. This cone is then fitted into a 60° glass funnel and wetted to its side walls. With this method of folding, it is very often a slow operation to decant-wash-and-filter due to the sluggish rate at which the filtrate passes through the paper into the receiving beaker or dish.

We annexed or inherited a simple stunt of folding the filter paper differently and found that we spent less time in filtering. It works just as efficiently in quantitative analysis as qualitative, as any particular paper used in this "four-fold" manner will filter faster than when folded in the usual manner.

Comparative tests were made using a solution containing cold barium sulfate, 11 cm. ashless filter papers of medium density and a new Pyrex glass 65-mm. funnel of exactly 60°. The only variable was the method by which the filter paper was folded. Fifty tests were made and the average time it took to empty the filter paper cone through the paper showed that the quadruple fold accelerates filtering one and a half that of the ordinary fold.

If one were to look over our shoulder as we 4-fold a filter paper into the shape of a cone to fit the funnel, the operation would appear to be rather simple. It is, however, an operation that is easier to do than to describe, so please don't be discouraged if your first attempt to follow our directions does not succeed. Try it several times until you get the knack; it's well worth learning. The simple directions are: 1. Fold once along the diameter; 2. open flat then fold again at right angles; 3. turn disc over, fold so that a crease in the lower half bisects a quadrant in the upper half; 4. open flat and fold at right angles to crease made previously. *The Laboratory*, December, p.75.

Patents—Fine Chemicals

Preparation photographic emulsions; producing colloidal silver bromide by reaction of a silver salt with a compound of the class of colloidal hydrogen bromide and colloidal bromine hydrate. No. 1,982,802. Ernest Govett, New York, N. Y., to Govett, Ltd., New York, N. Y.

Process producing condensation products of carbohydrate derivatives. No. 1,982,822. Jos. V. Meigs, Dobbs Ferry, N. Y., to Sweets Laboratories, Inc., New York, N. Y.

Preparation organic esters of thiophosphoric acid. No. 1,982,903. Erik Clemmensen, St. Louis, Mo., to Monsanto Chemical Co., St. Louis, Mo.

Process preparing a highly sensitive silver halide emulsion; adding to emulsion at any stage of its preparation a solution of a silver salt of an acid the anion of which contains a metal atom of the tungsten group of the sixth series of the periodic system. No. 1,982,987. Paul Goldacker, Berlin-Neukolln, Germany, to Agfa Ansco Corp., Binghamton, N. Y.

Manufacture a positive sensitized paper, having a dry coating composed of a metal salt of p-diazo-diphenylamine in admixture with an acid. No. 1,983,005. Suco Sakurai, Koishikawa-Ku, Tokyo, Japan, to Zaiden Hojin Rikagaku Kenkyujo, Tokyo, Japan.

Germicidal preparation for sterilizing surgical instruments, etc., subject to impairment by heat or corrosion; preparation containing formaldehyde, an alcohol, and a corrosion inhibiting agent comprising a nitrite and water. No. 1,983,031. Lester C. Himebaugh, New York, and Philip P. Gray, Hollis, N. Y., to Parker, White & Heyl, Inc., New York, N. Y.

Synthesis of camphor. No. 1,983,894. Ernst K. H. Berger, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Method processing photographic elements; developing elements in an alkaline developer, immersing in a stop bath containing in solution a compound yielding the borate ion; then fixing elements in an acid hardening fixing bath containing alum. No. 1,984,086. Harold D. Russell, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Production permanently colored light-sensitive layer for use in carbon printing; through use of gelatine, an alkali bichromate and silver iodide, having adsorbed a basic dye (strongly colored). No. 1,984,090. Merrill W. Seymour, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Process making a cellulose nitrate-acylate; acylating cellulose in presence of a liquid nitrating agent selected from the group of NO_2, N_2O_4, N_2O_3, and N_2O_5. No. 1,984,093. Cyril J. Staud and James T. Fuess, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Preparation of benzyl esters of a cellulose derivative containing a phthalyl group. No. 1,984,094. Cyril J. Staud and William O. Kenyon, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Preparation water-soluble alkyl-mercury-mercapto compounds, said compounds having an antiseptic effect. No. 1,984,097. Karl Streitwolf and Paul Fritzsche, Frankfort-am-Main, Germany, to Winthrop Chemical Co., Inc., New York, N. Y.

Method avoiding harmful tanning and precipitating action of a permanganate photographic bleaching bath; by adding thereto a polybasic inorganic acid other than sulfuric acid, capable of forming with manganese

a complex salt which is relatively unionized. No. 1,984,133. Kenneth C. D. Hickman, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Preparation mercurated hydroxy aryl sulfides. No. 1,984,174. Walter G. Christiansen, Glen Ridge, N. J., and Eugene Moness, Brooklyn, N. Y., to E. R. Squibb & Sons, New York, N. Y.

Germicidal preparation; comprising a cyclohexyl phenol, a substituted phenolic body of the alkylated and halogenated phenols class and having germicidal properties, an aqueous vehicle, and a dispersing agent. No. 1,984,646. Emil Klarmann, Jersey City, N. J., to Lehn & Fink, Inc., Bloomfield, N. J.

Process of decomposing thiocyanic acid, by means of a mineral acid; using sulfuric acid and ammonium sulfate. No. 1,984,757. Fritz Overdick, Leverkusen/Wiesdorf, Germany, to I. G., Frankfort-am-Main, Germany.

Manufacture arseno-stibio compounds. No. 1,984,765. Hans Schmidt, Wuppertal-Vohwinkel, Germany, to Winthrop Chemical Co., Inc., New York, N. Y.

Production an ester of a polycarboxylic acid in which the hydrogen of at least one of the carboxyl groups is replaced by an alkoxy methylene group. No. 1,984,982. Leonard Nicholl, Nyack, N. Y., to Kay-Fries Chemicals, Inc., West Haverstraw, N. Y.

Preparation composition of matter, comprising a cellulose derivative and an ester of a polycarboxylic acid in which the hydrogen of at least one of the carboxyl groups is replaced by an alkoxy methylene group. No. 1,984,983. Leonard Nicholl, Nyack, N. Y., to Kay-Fries Chemicals, Inc., West Haverstraw, N. Y.

Process for separation of gluconic acid; seeding an aqueous gluconic acid solution containing dry substance with gluconic acid crystals, allowing syrup to crystallize, finally introducing into solution aqueous gluconic acid. No. 1,985,255. Horace S. Isbell, Washington, D. C., to the Government of the United States, represented by the Secretary of Commerce.

Method producing arylamine having formula X—CONH—Arylene—NH_2; in which X represents a hydroaromatic nucleus, and arylene an arylene nucleus. No. 1,985,601. Miles A. Dahlen and Robert E. Etzelmiller, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Coal-Tar Chemicals

New Synthesis of Hydrocarbon Oils

According to a report published in *Deutsche Allgemeine Zeitung*, a new process has been worked out for the synthesis of a whole series of hydrocarbon oils from carbon monoxide and hydrogen at ordinary pressure. The method has been tried out by the Ruhrchemie A.-G., and is one of many schemes that have been put forward for rendering Germany less dependent upon foreign sources for industrial raw materials. It is claimed that gasoline, gas oil, Diesel oil, and hard and soft paraffin waxes in the purest, sulfur-free condition have been obtained. Ruhr coke is to be the source of the carbon monoxide, and the opinion is expressed that the process will yield very considerable quantities of all the products obtainable from crude Pennsylvanian oil.

Patents—Coal Tar

Preparation diazoimino compounds having formula R—(—N=N—X)n; R representing residue of an arylamine, X residue of a heterocyclic imine which is partially hydrogenated and which contains at least one water-solubilizing group, the *n* being the integer 1 or 2. No. 1,982,681. Eugene A. Markush, Jersey City, N. J., to Pharma Chemical Corp., New York, N. Y.

Preparation resinous reaction product of a mixture of unsaturated hydrocarbons, having as the essential ingredients a cyclic diolefine and an alkyl benzene in the presence of a metallic halide catalyst. No. 1,982,707. Chas. A. Thomas, Dayton, Ohio, to Dayton Synthetic Chemicals, Inc., Dayton, Ohio.

Process preparing mixture of dicyclohexylamine and cyclohexylamine; hydrogenating phenol and aniline, simultaneously condensing compounds obtained by conducting vapors of aniline and phenol with hydrogen over a nickel metal catalyst. No. 1,982,985. Otto Ernst and Ludwig Mack, Frankfort-am-Main-Hochst, Germany, to I. G., Frankfort-am-Main, Germany.

Composition of matter, comprising organic reaction product of a pyrazolone compound, with a dyestuff containing at least one acid group but not a diazo group. No. 1,983,045. Ralph B. Payne, Elma, and Karl Friedrich Conrad, Buffalo, N. Y., to National Aniline & Chemical Co., Inc., New York, N. Y.

Process removing suspended particles from a gas. No. 1,983,338. Gilbert A. Bragg, deceased, late of Pittsburgh, Pa., by Fidelity Trust Co., executor, Pittsburgh, Pa., to Koppers Co. of Delaware, Pittsburgh, Pa.

Process removing pitch from gases. No. 1,983,366. Earl V. Harlow, East Orange, N. J., to Koppers Co. of Delaware, Pittsburgh, Pa.

Preparation seleno-anthraquinone compound; a 2, 2′-diamino-dianthraquinonyl-diselenide. No. 1,983,561. Melvin A. Perkins, Milwaukee, Wis., and Oakley Maurice Bishop, deceased, late of Wilmington, Del., by Eva P. Bishop and Wilmington Trust Company, executors, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Distillation of tar. No. 1,983,915. Gregory Edward McCloskey, South Orange, N. J., to The Barrett Co., New York, N. Y.

Process of separating hydrogen contained in coal gas. No. 1,984,463. Georges Claude and Jean La Rouge, Paris, France, to l'Air Liquide, Societe Anonyme out l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France.

Preparation hydroxyquinone compound; being the oxidation of 2-methyl naphthalin to form 2-methyl-1, 4-naphthoquinone, and the introduction of a hydroxyl group in the 3-position of the 1, 4-naphthoquinone ring by the use of an oxidizing process. No. 1,984,511. Rudolph J. Anderson and Melvin S. Newman, New Haven, Conn., to New Haven Dispensary, New Haven, Conn.

Method treating non-gaseous material having present components adapted to volatilize on heating. No. 1,984,731. Ira H. Derby, Indianapolis, Ind., to Peter C. Reilly, Indianapolis, Ind.

Production 1-nitro-anthraquinone-6-carboxylic acid and their carbonyl halides; treating terephthaloyl-ortho-benzoic acid with sulfuric acid, treating resultant product with a nitrating substance; and further treatment to convert a carboxyl group to a carbonyl halide. No. 1,985,232. Earl Edson Beard, So. Milwaukee, Wis., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process making a sealing liquid for waterless gas holders; a pressure still tar distillate obtained by the fractional distillation of the residual tar from the cracking of a low boiling petroleum oil. No. 1,985,860. Wm. A. Gruse, Wilkinsburg, Pa., to Gulf Refining Co., Pittsburgh, Pa.

Patents—Petroleum

Process preparing used oil filtering media for revivification. No. 1,982,828. Arthur E. Pew, Jr., Bryn Mawr, and Leon A. Tarbox, Ridley Park, Pa., to Sun Oil Co., Phila., Pa.

Apparatus for destructive distillation of hydrocarbons. No. 1,982,863. Benjamin Q. P. Foss, deceased, late of San Francisco, by Clarinda G. Foss, administratrix, San Francisco, Cal.

Process purifying used mineral lubricating oils. No. 1,982,992. Ferdinand Joseph Friedrich Karthaus, Probolinggo, Java.

Heat treatment of petroleum oil vapor and other hydrocarbonaceous starting material. No. 1,983,027. Ira Walton Henry, Greenwich, Conn., to Ionizing Corp. of America, New York, N. Y.

Apparatus oil cracking. No. 1,983,028. Ira Walton Henry, Greenwich, Conn., to Ionizing Corp. of America, New York, N. Y.

Oil heating apparatus. No. 1,983,029. Ira Walton Henry, Greenwich, Conn., to Ionizing Corp. of America, New York, N. Y.

Process refining petroleum oil distillates; adding small volume of a solution of halogen salts to a large bulk of distillates containing a relatively small amount of solid alkali metal. No. 1,983,220. John D. Fields, Los Angeles, Cal.

Process destructively hydrogenizing carbonaceous substances, such as solid and liquid fuels, distillation and extraction products; by first treating them with hydrogen in presence of a sulfide of a metal of the sixth group of the periodic system. No. 1,983,234. Carl Krauch, Ludwigshafen-am-Rhine, and Mathias Pier, Heidelberg, Germany, to Standard-I. G. Co., Linden, N. J.

Production valuable liquid hydrocarbons from a distillable carbonaceous material comprising substantial amounts of higher boiling hydrocarbons. No. 1,983,241. Mathias Pier, Heidelberg, and Ernst Donath, Mannheim, Germany, to Standard-I. G. Co., Linden, N. J.

Method handling unvaporized residual oil obtained in the heat and pressure cracking of hydrocarbon oils, and containing volatile portions and heavy asphaltic products. No. 1,983,659. John Cutter, Tulsa, Okla., to Universal Oil Products Co., Chicago, Ill.

Process cracking higher boiling hydrocarbons to form lower boiling hydrocarbons. No. 1,983,664. Eugene C. Herthel, Chicago, Ill., to Sinclair Refining Co., New York, N. Y.

Apparatus and method of separating entrained oil from acid sludge produced by the treatment of mineral oil with sulfuric acid. No. 1,983,678. John T. Rutherford, Berkeley, Cal., to Standard Oil Co. of California, San Francisco, Cal.

Hydrocarbon oil cracking process. No. 1,983,688. Chas. H. Angell, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Process for increasing anti-knock value of natural and straight-run gasoline to produce a commercial anti-knock automotive fuel, in one step of process using an acid of phosphorus. No. 1,983,693. Gustav Egloff, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Emulsifier apparatus. No. 1,983,782. Leslie P. Shropshire, Chester, Pa., to Sinclair Refining Co., New York, N. Y.

Apparatus for conversion of higher boiling hydrocarbon oils into lower boiling ones. No. 1,983,919. Max G. Paulus, Casper, Wyo., to Standard Oil Co., Whiting, Ind.

Apparatus for production solid carbon dioxide. No. 1,984,250. Joseph R. Chamberlain, York, Pa., to York Ice Machinery Corp., York, Pa.

Method neutralizing a petroleum oil containing emulsion-forming oil soluble organic acids. No. 1,984,432. Jack Robinson, Wood River, Ill., to Standard Oil Co., Chicago, Ill.

Process of improving the antidetonating qualities of hydrocarbon oils suitable for use as motor fuel. No. 1,984,519. Marvin L. Chappell, Watson, Cal.

Process converting hydrocarbon oils into hydrocarbon oils of lower boiling point. No. 1,984,522. Henry L. Doherty, New York, N. Y., to Doherty Research Co., New York, N. Y.

Process converting hydrocarbon oils into gasoline-like hydrocarbons of lower molecular weight. No. 1,984,569. Maurice B. Cooke and Hermann Claus Schutt, New York, N. Y., to Alco Products, Inc., New York, N. Y.

Process for conversion of distillable solid or liquid carbonaceous material into lower boiling liquid hydrocarbon products. No. 1,984,596. Mathias Pier, Heidelberg, and Walter Kroenig, Ludwigshafen-am-Rhine, Germany, to Standard-I. G. Co., Linden, N. J.

Process for breaking petroleum emulsions of the water-in-oil type, by subjecting emulsion to action of a demulsifying agent. No. 1,984,633. Melvin De Groote, St. Louis, and Bernhard Keiser, Webster Groves, Mo., to Tretolite Co., Webster Groves, Mo.

Conversion hydrocarbon oils. No. 1,984,662. Kenneth Swartwood, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Process for treating a mixture of hydrocarbon vapors and gases. No. 1,984,686. Percy Mather and Donald J. Bergman, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Method desalting crude petroleum oil produced from wells which have been acid treated to increase the flow. No. 1,984,903. Cary R. Wagner, Chicago, Ill., to Pure Oil Co., Chicago, Ill.

Apparatus for bringing liquids and gases into mutual and intimate contact for scrubbing purposes. No. 1,985,010. Eric Henri Berkhuijsen, The Hague, Netherlands.

Process cracking hydrocarbon oils. No. 1,985,029. Willis S. Gullette, Highland, Ind., to Sinclair Refining Co., New York, N. Y.

Process and apparatus for conversion of higher boiling oils into lower boiling ones. No. 1,985,053. Wm. F. Moore, Jackson Heights, N. Y., to The Texas Co., New York, N. Y.

Oil distillation apparatus. No. 1,985,068. Nicholas Weber, New York, N. Y., to C. H. Leach Co., New York, N. Y.

Process cracking hydrocarbon oils. No. 1,985,214. Joseph K. Roberts, Hammond, Ind., to Standard Oil Co. (Indiana), Chicago, Ill.

Apparatus and process for converting hydrocarbon oils. No. 1,985,233. Edwin W. Beardsley. Texas City, Tex., and Albert P. Sachs, New York, N. Y., to Petroleum Conversion Corp., New York, N. Y.

Process cracking petroleum oils. No. 1,985,440. David G. Brandt, Westfield, N. J., to Doherty Research Co., New York, N. Y.

Apparatus for oil separation. No. 1,985,591. John T. Welsh, Ridgway, Pa.

Apparatus and process for treating hydrocarbons. No. 1,985,680. Dwight B. Mapes, Lincoln, Nebr., to Frankforter Oil Process, Inc., Omaha, Nebr.

Process for breaking a petroleum emulsion of the water-in-oil type; subjecting emulsion to the action of a demulsifying agent. No. 1,985,692. Claudius H. M. Roberts, Long Beach, Cal., to Tretolite Co., Webster Groves, Mo.

Process decolorizing hydrocarbon distillates in a plurality of chambers containing contact material, and containing sulfuric acid placed in the lower part. No. 1,985,717. Sumner E. Campbell, Long Beach, Cal.

Process for breaking petroleum emulsions of the water-in-oil type; by subjecting emulsion to action of a demulsifying agent. No. 1,985,720. Melvin DeGroote, St. Louis, Mo., to Tretolite Co., Webster Groves, Mo.

Method removing undesirable thiophenol compounds from phenols recovered from petroleum hydrocarbons. No. 1,982,120. Johan C. D. Oosterhout, Port Arthur, Tex., to Texas Co., New York, N. Y.

Production lubricant, comprising glycerin, soap of acid from hydrogenated oil, and soda rosin soap. No. 1,982,198. Lawrence C. Brunstrum, Chicago, Ill., and Maurice R. Schmidt, Hammond, Ind., to Standard Oil Co., Chicago, Ill.

Production of a plug valve lubricant which will adhere to surfaces on which it is applied, containing graphite, a petroleum residue, and an anhydrous lime soap. No. 1,982,199. Lawrence C. Brunstrum, Chicago, Ill., to Standard Oil Co., Chicago, Ill.

Production motor fuel from cracked hydrocarbon distillates. No. 1,982,267. Thomas Hunton Rogers and Vanderveer Voorhees, Hammond, Ind., to Gasoline Antioxidant Co., Wilmington, Del.

Production motor fuel; being cracked gasoline normally tending to deteriorate and form gums, containing a gum inhibiting agent of the dinitroso polyhydroxy benzenes group, nitroso naphthols wherein the nitroso and hydroxyl groups are on adjacent carbon atoms, and a nitroso aniline. No. 1,982,277. Carl, Winning, Elizabeth, N. J., to Gasoline Antioxidant Co., Wilmington, Del.

Manufacture fuel for internal combustion engines; being petroleum hydrocarbon material of the character of gasoline, together with an aromatic amine and an anhydrous alcohol containing not more than 2 carbon atoms in its molecule. No. 1,982,420. Jean Felix Paul de La Riboisiere, Paris, France.

Process for hydrocarbon oil conversion. No. 1,982,462. Joseph G. Alther, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Process of cracking hydrocarbon oil. No. 1,982,469. Gustav Egloff, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Production motor fuel consisting mostly of hydrocarbon distillates and which tends to deteriorate and develop gum on storage, containing a nitrosophenol for retarding these tendencies. No. 1,982,618. Thomas H. Rogers and Vanderveer Voorhees, Whiting, Ind., to Gasoline Antioxidant Co., Wilmington, Del.

The Literature

Articles of interest to the chemical and process industries particularly noted in a monthly review of the U. S. and foreign periodicals.

Heavy Chemicals. "Recent Developments in the Chemistry of Sulfur," by M. P. Applebey. Reviews economics of sulfur, as well as technical developments. *Chemistry & Industry*, British, Dec. 28, p1097.

Heavy Chemicals. "The Production of Organic Acids by Fermentation." A survey of processes applied to carbohydrates in particular. *The Chemical Age*, British, Dec. 15, 22, pp531 and 555.

Emulsions. "Technical Aspects of Emulsions." *The Chemical Age*, British, Jan. 12, p27.

Petroleum-Chemical Specialties. "Insecticidal Sprays for Fruit Trees." Discusses uses of petroleum oils in agricultural sprays. By H. Martin. *The Fertilizer, Feeding Stuffs and Farm Supplies Journal*, British, Dec. 19, p674.

Rubber. "Compounding Ingredients." Discusses in detail compositions, properties, functions. *India Rubber World*, Jan. 1, p31.

Safety. "Industrial Respirators," by Leonard Levy and L. J. P. Byrne. *The Industrial Chemist*, British, December, p476.

Safety. "Industrial Gas Masks," by J. Davidson Pratt. *Chemistry and Industry*, Dec. 28, p1092.

Solvents. "The Cleaning of Metals," by S. Wernick. Discusses degreasing by means of organic solvents. *The Industrial Chemist*, British, December, p479.

Textile Chemicals. "Solvents in Textile Processing," by A. E. Sunderland. *Textile Colorist*, January, p17.

Textile Chemicals. "Antioxygens: Theory and Application," by C. L. Moore. Discusses inhibiting deterioration of linseed oil and other textile chemicals. *The Dyer & Textile Printer*, British, Dec. 21, p651.

Textile Chemicals. "Technical Oils in Theory and Practice." Textile Colorist, January, p14.

Textile Chemicals. "Fatty Acids in the Textile Industry," by K. A. Pelikan. *Rayon and Melliand Textile Monthly*, January, p61.

Textiles. "Modern Methods of Stain Removal," by J. F. Holmes. *Textile Colorist*, December, p806.

Textiles. "A Concise Compendium of the Textile Solvents," by "A. H. P." *American Dyestuff Reporter*, December 17, p705.

Waxes. "Paraffin Wax and Petroleum Ceresins." Discusses their use in industry. *The Chemical Age*, British, Jan. 12, p23.

Water Treatment. "Practical Aspects of Storing and Handling Ferric Chloride," by J. M. Potter. *Water Works and Sewerage*, January, p12.

Wines. "Wine Production," by Gerald L. White. *Canadian Chemistry and Metallurgy*, December, p265.

Miscellaneous. "The Stuff of Life," by Jacob G. Lipman. This is the '34 Chandler Lecture. *Industrial and Engineering Chemistry*, January, p103.

CORRECTION. Article "Sulfuric Acid—To Buy or to Build," by Andrew M. Fairlie, should have been credited to *Industrial & Engineering Chemistry*, December, p1280, instead of to *Chemical & Metallurgical Engineering*.

Equipment Booklets

E332. **"Index to A. S. T. M. Standards and Tentative Standards."** American Society for Testing Materials, 260 S. Broad st., Philadelphia, Pa. Through the courtesy of the Society copies are available free to CHEMICAL INDUSTRIES' readers.

E333. **"Technical & Industrial Platinum." J. Bishop & Co.**, Platinum Wks., 15 W. 47 st., N. Y. City. Contains a brief history of platinum; a catalog of pieces, dishes, etc. The section devoted to tabular data is most complete.

E334. **"The Water Tower."** Chicago Bridge & Iron Wks., 37 W. Van Buren st., Chicago, Ill. January issue of *The Water Tower* contains a story describing the Guardite vacuum fumigation at the W. F. Schrafft & Sons Co. plant in Boston.

E335. **Chemicolloid Laboratories**, 44 Whitehall st., N. Y. City. Circular describes a new portable colloid laboratory model.

E336. **"Piax."** The Debevoise Co., 968 Grand st., Brooklyn, N. Y. Describes a non-oxidizing fume-proof coating for protection of metal under conditions which are completely destructive of paint.

E337. **General Electric Co.**, Schenectady, N. Y. A booklet describing turbines for mechanical drive which provide an economical, reliable drive for fans, pumps, compressors, pulverizers and similar apparatus.

E338. **The Lawrence Pump & Engine Co.**, P. O. Box 70, Lawrence, Mass. Company has just issued a new 6-page bulletin covering the centrifugal stock pumps they make. Company claims these pumps are not made to meet an average set of specifications, but are best described as "Custom-Built," each pump being constructed to comply with the purchaser's individual operating conditions. The bulletin takes up the array of features which are flexibly designed into the Vortex Stock pump. The pump's general heavy construction and large passage areas appear to fit it admirably for handling pulp and paper stock of consistencies up to 5% and over, sewage, dye stock, tanners waste, or any liquid carrying a high percentage of solids, when a low velocity is needed.

E339. **Pulmosan Safety Equipment Co.**, 186 Johnson st., Brooklyn, N. Y. New 4-page circular describes safety car devices.

E340. **"Paint."** Sherwin-Williams, Inc., Cleveland, Ohio. A new house organ largely devoted to the industrial users of paints and their problems.

E341. **C. J. Tagliabue Mfg. Co.**, Park & Nostrand aves., Brooklyn, N. Y. A bulletin (No. 1101), describes in complete detail *tag* pyrometers with high speed photo-electric action.

E342. **Worthington Pump & Machinery Co.**, Harrison, N. J. New leaflet describes vertical vacuum pumps, single and 2-stage. Type VV for industrial purposes.

E343. **Worthington Pump & Machinery Co.**, Harrison, N. J. New leaflet describes Worthington gas engines, vertical 4-cycle.

E344. **Worthington Pump & Machinery Co.**, Harrison, N. J. New leaflet is devoted to Worthington steam booster compressors.

E345. **The U. S. Stoneware Co.**, 50 Church st., N. Y. City. *Bulletin No. 403* describes U. S. Standard jars, tanks, stills and mixers for acids, extracts, food products, alkalies, chemicals and pharmaceuticals.

E346. **C. J. Tagliabue Mfg. Co.**, Park and Nostrand aves., Brooklyn, N. Y. *Bulletin No. 1098* describes the new A. S. T. M. Cloud and Pour Test apparatus for lubricating oils.

E347. **Buffalo Foundry & Machine Co.**, Buffalo, N. Y. A brand now booklet describes Buflokast alloys of iron and their use in various chemical castings (various pieces of chemical equipment). Booklet is well illustrated.

Chemical Industries,
New York City.
25 Spruce Street,

I would like to receive the following booklets; specify by number: ....

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Chemical Markets & News

Chemical Industries' Poll Shows Widespread Dissatisfaction with NRA Among Chemical Consuming and Chemical Producing Industries—Garvan Is Honorary Chairman of the N. Y. Committee for the Celebration of the 300th Anniversary of the American Chemical Industry—

Of 657 firms in the various chemical process industries 88.2% are not satisfied with the working of the NRA codes. Half of them voted by secret ballot, sent to the subscribers to CHEMICAL INDUSTRIES, to abolish NRA totally; 252 want to see NRA modified; and 77 want NRA continued as it is.

Complete abolishment of NRA just missed registering a majority of the votes cast by the narrow margin of two-tenths of one per cent., and there were only 11.7% of the firms voting who would continue the present system of codes as they have been set up under the National Recovery Act. Careful tabulation of the ballots by certified public accountants confirms the generally accepted impression that it is the smaller companies who find NRA the least aid to recovery; but it is contrary to expectation to learn that of those who would see the present codes modified, a clear-cut majority would give the Government power to impose codes. Among those who favor modification, there is a very decided opinion against both compulsory control of production and price fixing.

How the Votes Were Cast

Every precaution was taken to insure that a frank and unprejudiced opinion might be registered. The ballots were secret, identified only by a separate card to insure that the vote was cast by a responsible executive, and the questions were framed carefully to be broad, yet revealing of the ideas which business men have formulated on some of the disputed aspects of NRA. The greatest number of ballots were returned by the chemical consuming industries, such as paint, textile, leather, paper, rubber, glass, soap, etc., a widely scattered and thoroughly representative group of manufacturers. Chemical manufacturers were second, with producers of such raw materials as naval stores, metals, sulfur, oils, and petroleum, etc., third, and chemical distributors, i.e. jobbers, brokers, sales agencies, etc., fourth. Because they are operating under a distinct code the fertilizer manufacturers were classified separately.

Many of the ballots were accompanied by interesting comments that range in sentiment all the way from: "Great just as it is!" to "A terrible pain in the neck." The tabulations are completed just as we are going to press and next month a selection of comments will be published in the new "The Reader Writes—" Department.

The number of codes that each of the voters operates under was asked in the questionnaire, and although 89 of the 657 did not supply this data, the results are indicative of one of the chief complaints. Under one code are 287, 2 codes 114, 3 codes 51, 4 codes 26, 5 codes 11, 6 codes 15, 7 codes 4, 8 codes 4, none under 9 codes, and operating under ten or more codes are 9 companies, while 27 are operating under no code at all and 8 under the President's blanket agreement as to hours and wages. Seven firms reported that they did not know how many codes they are operating under.

Associations

¶Plans Complete for April A. C. S. Meeting in N. Y.—Drug, Chemical Dinner—Leather Chemists Will Meet at Skytop—

Appointment of Francis P. Garvan, president of the Chemical Foundation, as honorary chairman of the N. Y. Committee which is to organize the celebration of the 300th anniversary of the founding of the nation's chemical industries, is announced.

Tabulation of NRA Secret Ballots

Group	To Abolish NRA	To Continue NRA	To Modify NRA	Total
Chemical Manufacturers	65	10	36	111
Chemical Distributors	36	6	27	69
Fertilizer manufacturers (not raw materials producers—latter are classified as chemical manufacturers)	7	8	3	18
Chemical Consuming industries (including glass, paper, rubber, textile, tanning, leather, household specialties, industrial specialties, etc.)	61	17	57	135
Raw Materials, metals, etc.	40	7	31	78
Laboratories, consultants	17	1	1	19
Containers (boxes, drums, bottles, etc.)	4	2	2	8
Machinery and Equipment	23	9	23	55
Unknown as to group	75	17	72	164
Totals	328	77	252	657
Percentage of the Total	49.8+%	11.7+%	38.4%	99.9+%

Table Showing Sentiment on Imposition of Codes, Hours and Wage Minimums, Compulsory Limits to Production, Price Fixing*

	Total Answering	Number answering Yes	Percentage of total Yes	Number answering No	Percentage of total No
Should the Government have power to Impose Codes on all Industries	277	145	53%	132	47%
Should all Codes contain hours and Wage Minimums	295	259	87%	36	13%
Should Compulsory Limits to Production be permitted	281	77	27%	204	73%
Should Price Fixing be continued	296	113	38%	183	62%

Breakdown by Total Number of Employees

Number of Employees	Total	Percentage of Total	To Abolish	To Continue	To Modify
1– 25	265	40%	50%	11%	39%
26–100	149	23%	50%	10%	40%
101–500	122	18%	37%	15%	48%
501–+	46	07%	39%	13%	48%
Not Given	75	12%	79%	8%	13%
Total No. of Ballots Cast	657	100%			

* Only votes of those who favored continuation or modification were considered in this division.

The tercentenary events will be held in N. Y. City in connection with the 89th meeting of the A. C. S., April 22 to 26, planned as the largest assembly in the history of science, according to Prof. Arthur W. Hixson of Columbia, general chairman of the Committee. More than 10,000 chemists, industrialists, and representatives of allied fields are expected to attend.

Mr. Garvan has long been active in the development of chemical science and in the upbuilding of the chemical industry. He received the Priestley Medal, highest honor bestowed by the A. C. S., as "the greatest lay patron of chemistry." Mr. and Mrs. Garvan have given large sums to chemistry in recent years. Mr. Garvan was Alien Property Custodian under President Wilson.

Lawrence W. Bass, director of research of the Borden Co., has been named vice-chairman of the Committee. D. P. Morgan, chemical economist of Scudder, Stevens & Clark, investment counselors of 1 Wall st., has been chosen secretary-treasurer. Mrs. Francis P. Garvan will be the honorary chairman of the Ladies' Committee, and will be aided by Charles A. Roth, vice-president of the International Exposition Co.

Assisting Committee Chairmen

Other committee chairmen include: E. M. Allen, president of Mathieson Alkali; R. T. Baldwin, A. C. S. treasurer and executive officer of the Solvents Institute; C. R. de Long, chemical economist of the Mutuelle Solvay of America; A. B. Newman, professor of chemical engineering at Cooper Union; A. W. Thomas, professor of chemistry, and L. T. Work, assistant professor of chemical engineering, Columbia; D. H. Killeffer, secretary of the Chemical Engineering Equipment Institute; John C. Olsen, head of the department of chemistry and professor of chemical engineering at Brooklyn Polytechnic Institute; William W. Winship, general manager of the Thermal Syndicate, Ltd., Brooklyn; Stewart D. Swan, director of research of the Dentists' Supply Co.; Foster D. Snell, consulting chemist, Brooklyn; S. D. Kirkpatrick, editor, *Chemical and Metallurgical Engineering*; H. B. Lowe, vice-president of the Reinhold Publishing Corp.; H. C. Parmelee, vice-president of the McGraw-Hill Book Co.; P. E. Landolt, chemical consultant; and A. Cressy Morrison of Union Carbide.

Just 300 Years "Young"

"Chemists have officially established the year 1635 as the birth date of the American chemical industry," Prof. Hixson reports. "At the tercentenary celebration, John Winthrop, Jr., scientist, soldier, and colonizer, will be acclaimed as the real founder of infant chemical industries from which have arisen industrial giants with an annual output valued at billions of dollars.

"Leaders in American industry, finance, and government will unite with the chemists in honoring Winthrop's long and successful struggle to transplant iron works, salt works, powder factories, and other chemical industries to American soil."

The industrial and historical side of American chemical industry will be the keynote of the gathering.

Beware, Procrastination

Over 700 reservations are already in the hands of Ray Schlotterer, secretary of the Drug, Chemical and Allied Section, N. Y. Board of Trade, for the 10th Annual Dinner, scheduled for Mar. 21 at the Waldorf. Only 1,000 reservations will be made for the main floor and the seats will be assigned strictly in the order in which they are received.

Last year the attendance at the dinner reached the 1,200 figure and it is now expected that the full capacity (1,600) of the Waldorf will be reached several weeks before the date set. The affair, once local in scope, is now decidedly national in the matter of attendance and the seating list on Mar. 21 will constitute the "Who's Who" in the chemical, drug and allied fields.

Single reservations or tables of 10 may be arranged for by contacting Ray Schlotterer, N. Y. Board of Trade, 41 Park Row, N. Y. City, by phone, telegraph or letter.

COMING EVENTS

Third National Knitwear Industrial Exposition, Grand Central Palace, N. Y. City, A. B. Coffman, Manager, Feb. 11.

American Ceramic Society, Hotel Statler, Buffalo, Feb. 17-22.

Technical Association of the Pulp & Paper Industry, Waldorf-Astoria, N. Y. City, Feb. 18-21, R. G. Macdonald, secretary, 122 E. 42nd st., N. Y. City.

Federated Textile Industries, Inc., annual dinner, Waldorf, Feb. 28.

American Society for Testing Materials, regional meeting, Philadelphia, Mar. 6.

Annual Dinner, Drug, Chemical & Allied Sections, N. Y. Board of Trade, Waldorf-Astoria, N. Y. City, Mar. 21.

Electrochemical Society, New Orleans, Mar. 21-23.

Southern Textile Exposition, Greenville, S. C., Apr. 8-13. Also Greenville Section of the A. C. S.

A. C. S., 89th meeting, N. Y. City, Apr. 22-27.

Tanners' Council of America, Spring Meeting, Waldorf-Astoria, N. Y. City, May 1-2.

American Water Works Association, annual meeting, Netherland Plaza, Cincinnati, May 6-10.

Fifth Annual National Premium Exposition, Palmer House, Chicago, May 6-10.

American Institute of Chemical Engineers, spring meeting, Wilmington, Del., May 14-16.

American Electroplaters' Society, annual meeting, Bridgeport, Conn., June 10-14.

American Leather Chemists 'Association, Annual Convention, Skytop Lodge, Skytop, Pa., June 12-14.

American Society for Testing Materials, annual meeting, Book-Cadillac, Detroit, June 24-28.

Exposition of Chemical Industries, Grand Central Palace, N. Y. City, Dec. 2-7.

LOCAL TO NEW YORK*

Feb. 15, American Institute of Chemists.

Mar. 8, joint meeting, 4 technical societies, Society of Chemical Industry in charge.

Mar. 22. Joint meeting, Electrochemical Society in charge.

Secretaries of Chemical Associations and Groups allied to chemistry (also the process industries) are urged to make use of this column.

* Chemist Club unless otherwise stated.

"Leatherists" Like Poconos

Council of the American Leather Chemists Association decided to hold the next Convention June 12, 13 and 14, at Skytop Lodge, Skytop, Pa. Meeting last year in the Poconos was such a success that the Association hopes to repeat their previous excellent convention. There will be a golf tournament this year, also, chairman of which committee will again be L. Cuthbert. Dr. G. D. McLaughlin is chairman of the program and entertainment committee. Dr. Leonor Michaelis of the Rockefeller Institute has been invited to speak on "Some Newer Aspects in the Chemistry of Keratin."

"Textilists" Study Alloys

More than 120 textile engineers and dyers attended a meeting of the American Association of Textile Chemists and Colorists, Jan. 11, at Philadelphia. One of the highlights of the program was a paper presented by Joseph E. Goodavage of the Philadelphia Textile School. Mr. Goodavage's paper recounted the interesting results of tests made on Enduro stainless steel in textile applications and in which this stainless steel showed marked superiority over other metals much used in the past. C. C. Snyder, Republic Steel Corp., Central Alloy Division, Massillon, Ohio, also spoke during a showing of the film, "Making It Tough." The film, produced by Republic Steel Corp., in collaboration with the U. S. Bureau of Mines, depicts the making of alloy steels. Mr. Snyder also addressed a dinner meeting of the Electro Chemical Society, Jan. 28, at the Hotel Bolton Square, Cleveland, on the subject, "Stainless Steel as Applied to the Chemical Industries."

Association Briefs

The Niagara District Chemical and Industrial Association held its January dinner meeting Jan. 17, at the Leonard Hotel, St. Catharines. W. G. Soley was guest speaker. His subject: "Curious Patents of the Carborundum Co."

Robert H. Nutt, the man with a "million dollar memory," was the speaker at the February meeting of the Chemical Club of Philadelphia.

Prof. Cosmo Ligorio of the Brooklyn College of Pharmacy led the recent American Institute Round Table Discussion on "The Application of Fine Particles in the Chemical Engineering Industry."

Dr. M. J. Rentschler, general manager, J.H.R. Products Co., Willoughby, Ohio, was the guest speaker before the Midland A. C. S. Section on Jan. 11.

Dr. Rudolph Rebold, president, Toxic Gas Research, was the January speaker before the N. Y. Section of the A. A. T. C. & C.

"Tailor-made Steel," manufactured to conform with the needs of the particular

job for which it is to be used, has become a commonplace in industry, Joseph Brennan, of the research laboratory of the Union Carbide, Niagara Falls, told members of the Lions Club at their weekly meeting on Jan. 20 at the Hotel Niagara.

Foreign

¶ '34 a Year of Chemical Expansion—Foreign Governments Extend Control over Chemical Industries—Germany "Commandeers" Excess Profits—I. C. I.'s New Plastic—German Press Ignores Haber Anniversary

Chemical industry abroad, as well as in the U. S., was characterized during the year just ended, by the establishment of new plants, conversion and extension of old plants, and introduction of new chemical commodities, according to C. C. Concannon, Chief of the Commerce Department's Chemical Division.

Complete data are not yet available but it is believed Japan led all foreign countries in new developments and increased production. Germany was also active particularly in the development of synthetic products to replace and reduce imports of natural materials, and in the conversion of old and idle plants to new uses.

Several new chemical factories were erected in Canada, and in Mexico a 4th zinc oxide plant was completed and a lime oil factory was established. In South America, Argentina, Brazil and Venezuela built several new chemical plants, and Chile commenced production of several medicinal and pharmaceutical products for the first time.

Practically every country in Europe built at least one new chemical plant during the year. These European plants are either making products new to the country, or entirely new to the industrial world, such as lanoline made in Poland for the first time and "Parabernol" and a new synthetic substitute for natural shellac produced in Germany. Germany perhaps led all other European countries in the introduction of new chemical products.

In Africa, where there are fewer changes, Kenya stood out prominently. Successful development of an essential oil industry in that colony brought "Kenya geranium oil" on the market in direct competition with the French product, and successful sample shipments of cedarwood and peppermint were made. Exports of orange oil from Kenya to the United Kingdom were relatively large during the year. A new boiler compound called "Tannoda" was also made and marketed in Kenya. Research during the year resulted in new uses for well known commodities, outstanding of which was the use of dry ice for air-cooling passenger planes in India.

No "Rugged Individualism" Permitted

Government control of chemical production, insofar as the establishment of new plants or the expansion of existing plants is concerned, is being rigidly enforced in Italy and Germany, in order to prevent overproduction and to protect small and medium-sized undertakings. Tenth list of Ministerial Decrees on applications for permits to construct new and enlarge existing chemical plants in Italy issued the latter part of October, prohibited the establishment of plants for the production of compressed yeast, hydrochloric acid and its derivatives, distillation of alcohol from grape lees, concentration and recovery of terpenes from citrus fruits, and low temperature distillation of lignite.

Decree, however, authorized plants for the production of sodium and potassium peroxides, ethylene dibromide and tetraethyl lead for anti-knock compounds. Other authorizations included such operations as glycerine recovery from the saponification of fats, production of insecticides, sumac extracts, dextrine, and essential oils.

In Germany, Reich Minister of Economics recently issued a decree prohibiting the establishment of new, or extension of old plants for the production of "certain" soda compounds until the end of December, 1936.

This action is designed to protect existing small and medium-sized producers of which there are many in Germany, as existing capacity is said to be sufficient to meet any likely demand. It is the first decree of the kind for several months. Prior to that time there had been a steadily increasing number of such prohibitions in a large number of industries including nitrogen, superphosphates, potash, bronze-powder, mineral pigments, and lime.

Only 6% Permitted

As the chemical industry is foremost among remunerative German industrial groups, German chemical companies are likely to be affected to a considerable degree by a recent law which requires conversion of all earnings above certain levels to government loans, according to a report from Consul Sydney B. Redecker, Frankfort-on-Main, made public by the Commerce Department's Chemical Division. These loans, report states, which are expected to reach 40,000,000 marks per annum, are to be utilized for carrying out public works projects and for other purposes in line with the Government's work creation program for reducing unemployment.

Many German chemical companies have continued throughout the depression to make remarkably favorable showings, some paying regular dividends up to 15% on outstanding common stock. Under the new law which became effective in December, superseding that enacted in Mar. '34, for the same purpose, dividends may be paid only up to 6% with an increase to 8% in those cases where profits in the preceding year were higher. All profits exceeding these levels must be turned over to the German Gold Discount Bank as loans for investment in Government bonds or other State-Guaranteed loans. After 4 years amounts so invested will be returned to the companies originally purchasing the bonds. Old law of Mar., '34, was so restricted by its terms that it affected only a few companies, and the yield was small.

Among chemical companies affected by the new law are those producing soaps and other cleaning agents, cyanides, fumigants, pharmaceuticals, wood distillation products, lamp black and pigments. (Current value of reichmark equals approximately 40c).

British Expansion

British chemical industry continued to expand during the closing months of 1934 though there was a natural gradual decrease in activity as the holiday season approached. Prices, with few minor exceptions, remained firm throughout the last quarter though demand was somewhat sluggish, particularly in the heavy chemical field. Dyestuffs, generally speaking, were in better demand than industrial chemicals.

As far as can be ascertained from available statistics English production of chemicals including dyestuffs during the last 3 months of the year remained constant in comparison with the 3rd quarter but was about 2% higher than for the first 3 months of '34, a report to the Dept. of Commerce's Chemical Division, states.

Generally speaking, English chemical industry was in a strong position at the end of the year, better perhaps than any other of the country. The great variety of products and their uses, together with an increasing number of openings in new fields, have kept prices and production levels of chemicals more regular than in most other industries.

Bulk of chemicals and dyestuffs produced in England during the last 3 months of the year were absorbed by the domestic market, although export demand was good. During the 3-month period exports of heavy chemicals, pharmaceuticals, and dyes and dyestuffs were valued at £4,171,175, an increase of 9% over the 3rd quarter. Exports of these products during the whole of '34 totalled £9,722,800, compared with £8,529,218 for the preceding year.

Plastic You Can Carve—U. K. Notes

English chemical and plastics trade papers are all excited over the new I.C.I. plastic exhibited at the London Exhibition of Industrial Art. It is a very clear,

colorless material and is very easy to turn and carve. Production is centered at the Billingham plant. It is reported from abroad that the I.C.I. and du Pont have exchanged ideas on the product.

Material can also be had in color by the simple expedient of adding the proper dyestuff. It has, so the report goes, many interesting and novel properties new to the plastic field. For some time now it has been rumored that du Pont was planning to enter the plastics field with a cast resin. Whether this is the type of product planned, is as yet unknown.

All classes of fertilizers imported into the United Kingdom during '34 registered increases in volume compared with the preceding year and, except for superphosphates, were heavier than for '32. Imports of phosphate rock, a substantial portion of which originated in the U. S., increased from 342,338 tons in '33 to 423,361 tons in '34, and the value advanced from £429,540 to £576,376.

F. W. Bain has been appointed chairman, I.C.I., in England. He succeeds Holbrook Gaskell, who early last year was appointed to the board of I.C.I. The newly appointed chairman served with distinction in the Gordon Highlanders in the World War, winning the Military Cross. At the conclusion of the war he became associated with United Alkali.

British Board of Trade has appointed a committee to meet with members of the dyestuffs licensing committee to aid in the general development of the British dye industry.

Is This German Slash Pine?

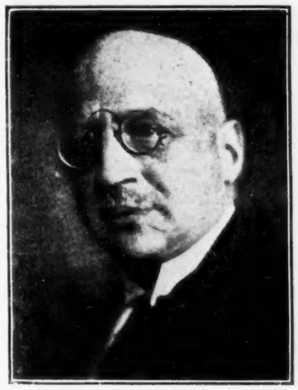
Germany in desperation and looking for synthetic materials to replace imported natural ones appears to be following, at least in a general way, the work of Dr. Charles Herty at the Savannah Slash Pine Laboratory. From Eberswalde, Germany, comes the report that new chemical processes have been perfected at the Wood Research Institute whereby the excessive resinous content of the common "kiefer" wood is extracted and the resulting pulp is equal to or better than the "fichte" pulp.

Reporters Were Not Assigned

Strangely silent were the German daily newspapers on the first anniversary of the death of Dr. Fritz Haber, Jan. 29th, the press, under orders from the Minister of Culture, Dr. Bernhard Rust, ignoring the gathering of distinguished scientists who met in Berlin to pay honor to the man who made possible Germany's supreme war struggle but who found it necessary a year before his death to resign from the directorship of the Kaiser Wilhelm Institute and "absent" himself in Switzerland.

If the German press was silent, not so were his former colleagues and scientific contemporaries. Prof. Max Planck, now the institute's president, traced Dr. Haber's career, concluding:

"Then came the moment when, under the Civil Service Law in the Third Reich, Haber had to part company with his



THE LATE DR. FRITZ HABER

The German press was strangely silent—

trusted associates, to whom he felt himself bound. He was no longer able to endure his position, and offered his resignation and went abroad. He will retain in the annals of science, as in the history of the Kaiser Wilhelm Institute, a place of honor. Therefore we reward loyalty with loyalty, and pay our earnest tribute at this moment to the German scholar and German soldier, Fritz Haber."

Prof. Otto Hahn, director of the Kaiser Wilhelm Institute for Chemistry, went more into detail regarding Dr. Haber's work, declaring that Germany's supply of powder and foodstuffs in the war had depended on Dr. Haber's nitrate process perfected in 1910 and that the success of the German gas attacks was largely attributable to the work under his direction of a staff of 2,200 chemists and assistants in the first months of the war. He said the German gas mask had also been the result of Dr. Haber's experiments.

Dr. Koeth, another speaker, cited Colonel Bauer, general staff officer, to the effect that "with the comprehensive application of gas as a fighting weapon the war could have been brought to a favorable conclusion for Germany in 1915."

Nitrogen Stages Recovery

Improved conditions in agriculture throughout the world is indicated by increased world production of both synthetic and natural nitrogen. Production of pure nitrogen during '33-'34 was the highest in recent years totalling 1,786,776 metric tons, an increase over the preceding year of approximately 110,000 metric tons, according to the annual report of the British Sulphate of Ammonia Federation.

Agricultural consumption of pure nitrogen in '33-'34 accounted for 1,663,000 metric tons, likewise the highest consumption in recent years, and compared with 1,455,000 metric tons for the '30-'31 fiscal period.

Production of natural nitrogen in Chile in '33-'34 increased 14,400 metric tons to 85,200, or approximately 20%, but was still far below either '30-'31 or '31-'32. Output in other nitrogen producing countries increased by 95,517 metric tons, or about 6%, over the '32-'33 fiscal period, statistics show.

Yield of nitrogen as a by-product in '33-'34 increased about 18% and more than half this gain was accounted for by the U. S. While nitrogen production shows improvement, atmospheric plants have on an average operated at somewhat less than 41% of capacity during the year, and in Germany greater efforts were being made to utilize the hydrogen facilities of nitrogen plants for the production of synthetic gasoline and other products.

World Chemical Notes

Regular deliveries of chrome ore were begun last month by Chromium Mining and Smelting, Ltd., from property near Obonga Lake (North-Western Ontario) to the smelter at Niagara Falls. Drilling and development work have already proven reserves of 225,000 tons of ore, containing 17% chromium. Canadian ore was used by U. S. bichromate producers (after a concentrating operation) during the War, but ordinarily bichromate manufacturers require a 47% minimum ore.

Rubber plantation estates in many instances are using sulfuric instead of acetic and formic for coagulation for economic reasons, it is reported.

Japan Acetic is increasing its capitalization to yen 1,500,000 and plans to enter the dyestuffs field.

The Japanese Government will attempt to get through the Imperial Diet a bill giving the Government power to close up obsolete fertilizer plants, the owners to be properly recompensed, and to exercise a very close control by Government officials on production, imports, exports, etc.

I. C. I. is reported as erecting a new plant to manufacture oxalic. Production is scheduled to start next September.

Brazilian Alkali Near

The alkali plant of the Companhia Electro-Chemica Fluminense, under construction at Rio de Janeiro, is expected to be placed in operation in February, according to a report to the Department of Commerce by Assistant Trade Commissioner Aldene A. Barrington.

Much of the equipment is of German manufacture, and 2 experts sent to Brazil by the equipment manufacturer will supervise production for 2 years. Caustic soda capacity is 2,500 tons annually, to be increased to 5,000 tons. Chlorinated lime

will be produced to the extent of 700 tons, which approximates current consumption.

Other products include 300 tons of hydrochloric acid and 1,200 tons liquid chlorine. With the availability of a domestic supply of chlorine the possibilities of chlorinating the domestic water supply for Rio de Janeiro and Sao Paulo are being investigated.

Foreign Trade

¶ *U. S. Paint Makers Gain Ground in Foreign Markets—Saar Benzol Producers Join German Cartel—Germany and Chile Reach Barter Agreement — Japan Increases Acetic Capacity—*

Aided by favorable exchange and improved conditions in many foreign markets exports of paints and paint products from the U. S. have been maintained at high levels since the beginning of '34. During the first 11 months exports of such products were valued at $12,633,000, an increase of 24% over the corresponding period of '33 when shipments of American paint products to foreign markets were valued at $10,206,000. While a portion of this gain in value was due to higher export prices, all major items on the list, except chemical pigments, made gains in volume as well.

Most impressive gain was registered in the case of ready-mixed paints; exports of which during the first 11 months were valued at $3,00,000, an increase of more than 56% over the '33 period, while the quantity advanced 35% to 1,665,300 gals. While the United Kingdom, France, Canada, and Germany are the leading foreign markets for American ready mixed paints, shipments were destined to more than 100 markets in '34.

Exports of chemical pigments in the period reviewed declined 13% to 124,000,000 lbs., but the value received was 11½% higher than in the January-November period of '33, and totalled $6,566,000. Mineral earth pigments, however, were higher both in quantity and value, the former advancing 40% to 28,000,000 lbs., and the latter 16% to $375,000.

Other important items among paint products exported in the '34 period with per cent. of increase included: bituminous paints, which advanced 24% to $383,300; paste paint which increased 26% in quantity to 1,527,400 lbs. and 30% in value to $236,300; while cold water paints advanced 13½% to 4,149,000 lbs. and 8% in value to $204,300. Nitrocellulose lacquers exports, totalled 802,500 gals., valued at $1,446,000, an increase of 30% in quantity and 37% in value compared with the corresponding period of '33, while varnish shipments to foreign markets advanced 5% in quantity to 333,760 gals., and 22% in value to $427,000.

Negotiations initiated last spring between Saar and German benzol producers have terminated in an agreement whereby 2 leading Saar benzol producers will become members of the German Benzol Association, according to a report from Consul Sydney B. Redecker, Frankfort-on-Main, made public by the Commerce Department's Chemical Division.

Although the bulk of the Saar benzol output has been consumed in Germany, Saar producers have lacked a retail distribution organization which they will now enjoy as members of the German Benzol Association, which is a well organized cartel distributing organization representing practically all benzol producers in the Ruhr district, the report states.

Benzol production in the Saar district totalled 30,000 metric tons in 1933 and the '34 output is estimated at between 38,000 and 40,000 metric tons, of which around 30,000 metric tons were exported to Germany and the remainder consumed largely in the Saar district itself. Only small quantities were delivered to France and most of these transactions were on a barter exchange basis.

By means of the improved "still exhaust" or "inner suction" process to be installed in Saar benzol plants, it is anticipated that the output can be appreciably increased. This improved system is said to increase benzol output by approximately 30%, and the yield is raised from 10 to 12%, though these gains are achieved at the cost of lessened thermal units of the gas produced. A leading benzol producer in Luxemburg has also joined the German cartel, according to the report.

Engines for Nitrate

Germany and Chile are said to have successfully negotiated a barter agreement and Chilean State Railroads is reported to have placed an order for 25 German locomotives. Germany will take more Chilean nitrate, part of the proceeds of the latter to be devoted to liquidating frozen German credits.

Germany is also reported as having made an exchange of chemicals for Roumanian soybeans.

Japanese Acetic Expansion

Japan, which formerly obtained its acetic requirements from abroad, chiefly the U. S. and Germany, now not only produces sufficient for home requirements, but is developing a considerable export trade. With plans being made in Japan to form a new chemical company for the manufacture of acetic, Japanese chemical trade papers are concerned over a possible surplus as the present domestic supply is said to be more than sufficient to meet local requirements.

New concern (capitalized at 500,000 yen), will manufacture acetic from carbide now being produced by a Japanese fertilizer plant. Japanese production of synthetic acetic during '32, the latest year for which figures are available, amounted to 4,459 metric tons (1,955,700 yen). While production figures during the years following '32 are not available it is evident, it is reported, that it has mounted rapidly as exports during the first 9 months of '34 amounted to 8,891 metric tons, or almost double the entire production of '32.

Customs and Tariffs

¶ *France and Italy Prescribe New Items Requiring Authorization—British Revise Nitrite Rate—U. S. Court of Customs and Patent Appeals Reverses Recent Mineral Oil Ruling—*

Special authorizations must be obtained in advance by French importers from the French Customs Administration for imports of certain chemicals hitherto unrestricted, under a decree published in the Journal Officiel for Jan. 5, '35, effective immediately.

Decree does not fix limits for the quantities to be admitted. Products affected are as follows: Cyanide of potassium free from sodium; cyanide of potassium and sodium; cyanides, "other"; artificial cryolite; chromic acid; chromate of zinc; chrome alums; artificial iron oxides, ground (except alkalized iron oxides for purifying gas); molybdic acid and molybdates; oxides of lead; unspecified salts of lead; butyl alcohol; methyl alcohol (methylene), rectified; acetone, and butyl acetate.

British Treasury, on the recommendation of the Import Duties Advisory Committee, has issued an additional import duties order, 1935, amending the rate of import duty on nitrite of soda from 20% ad valorem to £4 per ton.

Italy has added certain ferro-alloys, talc, benzene, citrous essential oils and essences, unspecified synthetic perfumes, and camphor to the list of products, the importation of which may be subjected to quota restrictions or prohibited except under license. This extension is effective from Jan. 28, according to a cablegram received by the Dept. of Commerce from the ambassador at Rome.

Schwabacher Wins Reversal

Recent decision of the U. S. Court of Customs and Patent Appeals in Washington has declared Russian paraffin oils to be free of duty, thereby reversing a decision of last year of the N. Y. Customs Court, which had upheld a ruling of the Treasury Dept. of February '32.

Ruling had reclassified Russian medicinal oils from the tariff free list, paragraph 1733 (paraffin oil, distillates of petroleum) to paragraph 5 of the duti-

able list (all medicinal preparations), providing 25% ad valorem duty.

S. Schwabacher & Co. Inc., 59 Pearl st., N. Y. City, large importers of white mineral oils, and the appellant in this case, have available a limited amount of copies of the decision of the Court of Appeals, which they will gladly mail upon request.

U. S. Fuller's Earth Rate

Fuller's earth treated with acid to remove oxides is dutiable as activated clay at one-fourth of 1% per pound plus 30% ad valorem, it is ruled by U. S. Court of Custom Appeals in a case involving an importation by L. A. Salomon & Bro. Importer claimed product was dutiable at $3.25 per ton as fuller's earth wrought or manufactured.

U. K. Reduces Oxalic Rate

United Kingdom duty on oxalic has been cut from 33⅓% to the general rate of 10% ad valorem. New rate is only temporary and is only effective to Mar. 31. Oxalic from the British Empire continues free of duty.

Personnel

¶ *Kitchel Is New Binney & Smith President—Grasselli Announces Changes—Other Shifts Reported*

The new president of Binney & Smith is Allan F. Kitchel. He succeeds to the position made vacant by the death of his father-in-law, Edwin Binney, on Dec. 17. Mr. Kitchel has been with B. & S. for 26 years and until his recent elevation was a vice-president and in charge of sales.

Davis, Grasselli, to Cleveland

H. E. Davis, former Grasselli manager at St. Louis, is returning to the Cleveland office to manage the Spray Products Division. A. H. Burkemper, former St. Louis Branch salesman, is now in charge at that point.

Burruss, Southern Pine Chemical

David M. Burruss, St. Louis, is now a director and executive vice-president, Southern Pine Chemical, Cleveland, formed by the merger of Wood Chemical Products, Georgia Pine Turpentine and Liberty Pine Products. Company is affiliated with Glidden.

Seymour L. Karpeles, for many years chief chemist of Sinclair & Valentine and more recently general superintendent, is resigning but has not announced his plans for the future.

Charles R. Haynes will do technical work in the Rubber Chemicals Division of Binney & Smith. He was with Naugatuck Chemical recently, working on latex developments.

Columbian Carbon elects R. L. Carr as vice-president to succeed the late Edwin Binney.

Titanium Pigment, 111 Broadway, N. Y. City, reports appointment of J. J. Williams to the staff.

Frank L. Campbell, formerly with John Lucas, is now general sales manager for O. Hommel Co., Pittsburgh.

Dr. Louis Klein, formerly associated with Parke, Davis, is now on the Hoffmann-La Roche staff.

Charles R. Sherman, formerly in charge of International Printing Ink's Chicago operations, is now an Ault & Wiborg vice-president, with headquarters at the main offices in Cincinnati.

Equipment Co. Personnel

H. C. Arnold, manager of the production department of International Nickel, moves up to the position of technical assistant to the vice-president in charge of production. A. J. Hanlon takes over Mr. Arnold's former duties.

John Kirby is now on the Washington staff of the Refrigerating Machinery Association.

H. W. Sweatt, former Minneapolis-Honeywell Regulator vice-president, is now president.

Aluminum Co. of America appoints V. C. Doerschuk general superintendent of its reduction plant. He will have Pittsburgh headquarters.

Oliver United Filters appoints P. J. McGuire as western sales manager in San Francisco. He takes the position formerly held by J. A. Lane, who resigned.

William M. Gross is now Chicago district sales manager for International Filter.

Obituaries

¶ *Col. Spruance, du Pont V.-P., Succumbs to Pneumonia—John T. Baker has Fatal Heart Attack on Florida Golf Course—*

Col. William Corbit Spruance, 62, a vice-president and director of du Pont, on Jan. 9, following a short illness. He entered the du Pont organization in '03 and was with the explosives department for years, later becoming head of the high explosives department. During the World War he was assistant to the chief of ordnance in charge of chemicals, propellents and explosives, and later chief of the explosives and loading division of the ordnance department. He was awarded the distinguished service medal. After the war he returned to du Pont as special assistant to Irenee du Pont, then vice-president. In '19 Col. Spruance was elected a director and member of the executive committee and vice-president in charge of production.

John T. Baker, 74, chairman of the board, J. T. Baker Chemical, Phillipsburg, N. J., on Jan. 17 at Lake Wales, Fla. He was stricken while playing golf. He was born in Orange, N. J., and graduated from Lafayette in '82. He became a director in Baker & Adamson Chemical in '84 and 10 years later formed J. T. Baker Chemical. His only son was killed in France in the World War.

Other Deaths Last Month

Philip Walling, 24, and Martin Anderson, 30, chemists, employed in the research division of Pittsburgh Plate Glass Co., Milwaukee, Jan. 11 and 12, respectively, from burns suffered Jan. 10 in an explosion and fire in the company's laboratory. Men were mixing pigments in an electric grinding machine, according to a police report.

E. M. Patterson, 50, Pittsburgh Plate Glass, on Jan. 5, from pneumonia.

Walter McGhee, 49, president, Enterprise Can, on Jan. 12.

John A. Lowry, 54, president, Northwest Magnesite Corp., Pittsburgh, a subsidiary of Harbison-Walker Refractories, on Feb. 3 at Pittsburgh.

Charles Warren Gillett, president of Champion Chemical Wks., Chicago manufacturer of bleach, on Dec. 31, following a short illness.

Alexander Joseph, 72, former president of the Pfeiffer Color, and founder of Pfeiffer Insecticide, Louisville, on Jan. 22, after an illness of 3 weeks. He was particularly well-known in the dry color field in the East.

In England, George Keville Davis, publisher of the *Chemical Trade Journal and Chemical Engineer*, on Dec. 14.

Douglass Montreville Scott, a Merck sales promotion representative, on Jan. 17 in Cleveland.

Frederick Osgood Paige, 71, president, Paige-Jones Chemical, affiliated with National Aluminate Corp., Chicago, on Jan. 20 at his home in Los Angeles.

Brookmire Suggestions

Brookmire Economic Service suggests: "Improved outlook for acetic acid consuming industries seems likely to lend strength to prices of this product this Spring. Consumption of acids and alkalies over the first few months of the year, it appears, will likely exceed last year by a small margin; but prices should remain mostly unchanged over this period.

"Past 2 weeks (Jan. 16) witnessed a rise in turpentine from 44½ to 50c which is 2c above the loan value extended by the Commodity Credit Corp. Demand has improved somewhat, but it is still of small proportions. Aside from a possible speculative rise in the early months of the year, prices seem likely to remain close to the loan value."

Herty Reviews

Urging every Southerner, in furtherance of his own interests, to do his part by supporting the Southern Chemical industry, Dr. Charles H. Herty of Savannah, Ga., distinguished chemist, in

DR. CHARLES H. HERTY

His "Urgent Message To the South" was—Buy Southern Chemicals and Fertilizers

his "Urgent Message to the South," made an impassioned plea to Southerners to use Southern-made fertilizer. Occasion was an address delivered Jan. 31 at the Atlanta Biltmore Hotel, before the Annual Meeting of the Association of Southern Agricultural Workers. In addition to several hundred members of the Association, the meeting was attended by prominent men in the banking, industrial, editorial and transportation fields.

Although most of the guests present had expected Dr. Herty to discuss only developments in his important work with slash pine, the internationally famous chemist described in vivid terms the recent growth of the chemical industry in the South and explained the importance of this industry to lasting Southern prosperity.

Urging the slogan: "Southern fertilizers for Southern farmers," Dr. Herty pointed out that the South can supply its farms with Southern potash, phosphate and nitrogen and stated that "No question has ever been raised as to the quality or the price of the products made right here in the South."

"Mason & Dixie Chemicals"

He cited "the erection of great manufacturing plants—such as the soda plants in Louisiana and Texas, the Kraft paper mills, stretching from Arkansas to Western Florida, the nitrogen fixation plants in Virginia and West Virginia, the rayon plants along the Atlantic Seaboard, and the great plant for extracting bromide from the Atlantic Ocean."

He added that in buying Southern fertilizers Southern farmers not only do their bit to support the South's chemical industry but help themselves since the American chemical industry believes in low prices. He said that the present low prices of nitrate of soda and sulfate of ammonia are due to the American industry. Stressing the great importance of these products to the nation's welfare, Dr. Herty asked "Why should we not all stand together here in the South in matters which bear so vitally on our future welfare"?

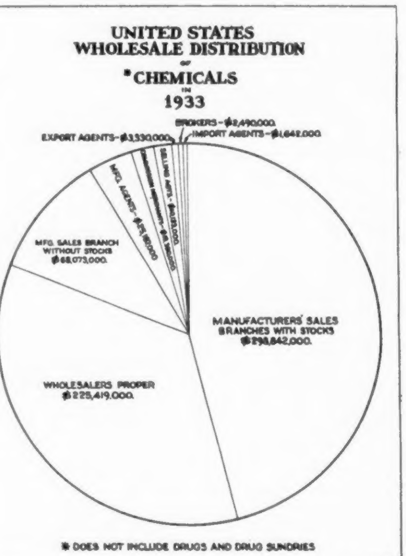
After discussing the importance of the chemical industry to the Southern farmer, particularly in terms of the fertilizer he buys, Dr. Herty brought his audience up to date on the use of pine wood. "We have now made newsprint of greater strength as to burst, tear, and tensile, than any commercial newsprint manufactured in the World," Dr. Herty told his listeners. He pointed out, however, that unless the South, and the Southern farmer, supports the growing chemical industry by the purchase of Southern chemical products in preference to foreign goods, the flow of capital to the South for other phases of the chemical industry may be affected. "I have in mind particularly," he asserted, "the attracting of capital to the South for the development of a great white paper industry."

In addition to newsprint, Dr. Herty quoted the successful manufacture of rayon from bleached sulfite pulp from young Southern pine.

Litigation

¶ Dow Loses First Skirmish on Acid Treatment for Oil Wells Patents — G. E.-Paramet Ready for Plastic Patent Suit—Cobellis Sues Pfister Chemical—Pfizer Demands "Blue Eagle"—

The acid treatment process of causing gas and oil wells to increase their flow is not patentable, Judge Franklin E. Kannamer in Federal District Court for northern Oklahoma, ruled Jan. 15 in dismissing application of Dow Chemical for an injunction against the Williams Brothers Well Treating Corp. of Tulsa, Okla.



—U. S. Census Bureau

This is how our huge chemical production reaches consuming channels

Ruling came after Judge Kennamer had listened to considerable expert testimony.

An appeal is to be taken to the Court of Appeals, and if necessary to the Supreme Court, Arthur G. Brown, attorney for Dow states.

Judge Kennamer held that the Gypsy Oil Co. had experimented successfully as far back as '28 on a similar acid treatment, and that the Muskegon Oil Corp. of Muskegon, Mich., likewise had used the method prior to filing of the Dow patent.

May Clarify Plastic Patents

In the Federal Court for the Eastern District of N. Y. this month will be fought the important G.E.-Paramet Chemical suit. G.E. alleges infringement of the so-called Kienle Patent No. 1,893,873. The Kienle Patent is said to be one of a group of patents which have been pooled by Cyanamid, G.E., du Pont, and Ellis Foster.

A notable array of legal and technical talent will be present. Charles Neave, assisted by Maxwell Barus, of Fish, Richardson & Neave, who tried the Duco case for du Pont, will handle this case for G.E. George F. Scull and Newton A. Burgess, of Gifford, Scull & Burgess, will represent Paramet. Wm. M. Grosvenor, assisted by Glenn Pickard, are G.E.'s technical experts. Charles L. Mantell has been retained for this purpose by Paramet.

Secret Dye Formulae

Dr. Fabricius Cobellis has entered suit in the N. J. Court of Chancery against Pfister Chemical of Ridgefield, N. J., alleging unlawful use of certain secret formulas and processes claimed by the plaintiff to have been given to the defendant company. Dr. Cobellis asks for an accounting and an injunction.

Pfizer Disputes NRA

Charles Pfizer & Co., N. Y. City, on Jan. 22 entered suit in the Supreme Court of the District of Columbia, to enjoin NRA from withdrawing its "Blue Eagle." Company had been cited recently by the National Labor Relations Board as violating the Chemical Code in discharging 4 employees allegedly for union activities.

Davison Receivers Winners

Davison Chemical's receivers were upheld in their suit against Silica Gel by the U. S. Circuit Court of Appeals, the Court allowing a claim of $3,615,107.98. Silica Gel is also in the hands of receivers.

For Southern Textiles

U. S. Testing (headquarters in Hoboken, N. J.) opens a Southern office and laboratory for the textile trade. Location—Greensboro, N. C.

Companies

¶ *Du Pont Will Test all Products from Health Standpoint—Cyanamid Forms Canadian Company—Rolls Chemical Celebrates 20th Anniversary—*

Du Pont dedicated and opened Jan. 22, its new medical research laboratory to be known as the Haskell Laboratory of Industrial Toxicology, purpose of which will be to test thoroughly, from a health standpoint, all products produced by the Company before they are placed on the market. Laboratory was planned to meet a need which has developed in this country because of the great growth of the chemical industry as represented by du Pont. Many new products have been developed in recent years and other new products are constantly being developed, some of them through entirely new processes. A function of the laboratory will also be to study the possible effects of the new products upon the health of employes during the process of manufacture. (See the Rotogravure Section. this issue, for photographs of the building and the dedication program.)

North American Cyanamid, Ltd.

American Cyanamid organizes a Canadian company, North American Cyanamid, Ltd., to operate the plants at Niagara Falls, and Beachville, Ont., Can. New company will also handle the marketing of the products of these plants in Canada and countries outside the U. S.

Kellogg Sales 50% Above

Sales of Spencer Kellogg & Sons are running approximately 50% ahead of last year, according to Howard Kellogg, Jr., vice president.

"We have been operating steadily, particularly in Buffalo, and shipments of all lines have been higher than normal for this time of the year," Mr. Kellogg says.

Market for linseed oil and allied products has been so active during the last few months that the Buffalo plant has been hard pressed to meet requirements, he added.

"While it is only normal to look for a slight falling off in demand after these last few months of remarkable activity, we are confident that sales will continue to run well ahead of last year."

Rolls Is Optimistic

Rolls Chemical, Buffalo, reports a highly satisfactory business in '34. Total sales, allowing for deflated values, were almost up to the peak of the boom days, particularly as far as tonnage was concerned. All through the period of industrial and economic depression company kept its entire organization intact, and outside of one year, all salaries are at their pre-depression levels. Rolls Chemical was started in '15 and this year will celebrate its 20th Anniversary.

H. J. Rolls, general manager of the company, is optimistic in regard to business for '35, not only on the staple and well-known chemicals, but also in regard to newer products that will play an important part in the industrial field through research and chemical synthesis, a new field that is without limitation.

Briefly Summarized

N. J. Zinc Sales purchases the business and good-will of David Randall & Co., Boston broker in raw materials, from the estate of Ralph E. Potter, and will continue the business as a branch office of N. J. Zinc Sales.

Kentucky Color & Chemical, Louisville, plans a new storage addition.

United Carbon purchases several gas holdings in Lawrence and Martin Counties, Kentucky.

P. & G. is reported as buying the Gwynne Bldg., Cincinnati, where the general offices of the company have been located for several years.

Varcum Chemical Corp., Niagara Falls, N. Y., manufacturer of synthetic resins, appoints the Baldwin-Urquhart Advertising Agency, of that city, to handle its advertising. Business papers and direct-mail will be used.

M. H. Sacks reports to CHEMICAL INDUSTRIES that he will sail shortly to South Africa to open up a plant for the manufacture of drugs, toiletries and cosmetics. Manufacturers of equipment may reach him at 85 Market st., Pretoria, Transvaal, South Africa.

Paramet Chemical is increasing capitalization from \$150,000 to \$250,000.

The Borax Mines, Inc., is a new borax mining company with property in Death Valley.

Noteworthy Expansion

Having recently purchased the building at 1016 Central st., Kansas City, Royal Manufacturing Co. of Duquesne, manufacturing chemists, owners and manufacturers of the Royal Highest Quality Lines, as well as private label lines, now have plants at Brooklyn, N. Y., Duquesne, Pa., Chicago, and Kansas City, Mo., with headquarters at Pittsburgh, Pa. Other locations will be added from time to time as distribution continues to increase. Executive officers are: K. Kovacs, president; S. S. Kovacs, vice-president at Chicago; Martin Kovacs, secretary and treasurer at Duquesne; Dan Kovacs, executive vice-president at Brooklyn; Joseph Weishaus, executive vice-president at Chicago; and Thomas Mitchell is in charge of the Kansas City plant.

Now Corporation, Not Company

Pacific Oil Mills and Pacific Vegetable Oil Co. have formed a consolidated company known as Pacific Vegetable Oil Corp.

Personal

¶ *Neuman Bests Kidnappers—American Institute Medalists—Little, Now Board Chairman—The "Passing Throng"—*

Chemical and industrial alcohol circles were surprised to learn last month that Simon S. Neuman, president of Publicker Commercial Alcohol, was being

PUBLICKER'S S. S. NEUMAN

Tristate gang set a \$50,000 price

guarded, and such precautions discouraged the so-called tri-state gang, headed by the late Robert Mais, from attempting to kidnap him. Arrest of Mais and several of his accomplices, following a jail break from Richmond, disclosed that they were planning to demand \$50,000 for Mr. Neuman's release. Mais was executed Feb. 2 for the killing of a mail truck driver on the streets of Richmond last year.

Medalists Nieuwland and Anderson

Modest, retiring, the prototype of the absent-minded professor of popular conception, Dr. Julius A. Nieuwland (Father Nieuwland of Notre Dame) refuses to get excited over the honors being bestowed upon him for his brilliant research work extending over the last 20 years, research that made possible synthetic rubber on a commercial scale. Accustomed to early rising, the saying of a short mass in the college infirmary, and a long day and often a long night with his test-tubes, Father Nieuwland hesitates to pause long enough to accept his high honors, for he has so much to do, but he came to N. Y. City to receive The American Institute Award on Feb. 7 and will come again for the April A. C. S. meeting when the 300th anniversary of the founding of the American chemical industry will be celebrated. The Reverend Father will be presented with the Nichols' Medal at that meeting. Dr. Carl D. Anderson, assistant professor of physics, California Institute of Technology, was also awarded the gold

medal of the American Institute at the dinner held at the Hotel Astor, and attended by a large gathering of "Who's Who" in the research fields.

Now Chairman Little

At the annual meetings of the stockholders and directors of Arthur D. Little, Inc., held respectively on Jan. 23 and 24, Arthur D. Little retired as president and

DR. ARTHUR D. LITTLE

After 50 years as president, he retires—to the chairman of the board

was elected as chairman of the board. Earl P. Stevenson, who has been with the organization since '19 and vice-president since '22, is now president, and Roger C. Griffin, a member of the staff since '09, was elected treasurer. Raymond Stevens continues as vice-president.

Following Board of Directors was elected: Carl P. Dennett, W. Cameron Forbes, Horace S. Ford, Randolph C. Grew, Roger C. Griffin, Arthur D. Little, Royal Little, Henry A. Morss, Henry G. Powning, Earl P. Stevenson, Robert G. Stone, Alexander Whiteside.

Dr. Little becomes chairman of his well-known Cambridge scientific organization within a year of its 50th anniversary. His staff now includes graduates of 22 universities and technical schools, with 11 graduates of M.I.T. alone. Dr. Little is sojourning at Tucson, Ariz., for the winter months.

Colorist Ketcham

Howard Ketcham, for the last 8 years prominently identified with color appeal in product design, opens an office at 545 5th ave., N. Y. City, where he will specialize in commercial phases of color in industry. As director of du Pont's Duco Color Advisory Service and editor of the Automobile Color Index, Mr. Ketcham has done pioneer work in promoting greater use of the right color in the proper place.

Too Many Colors

There are too many needless colors employed in commerce today, according to Colorist Ketcham. This wastes time, efficiency and money. One phase of his work in the automotive industry was the reduction of 13,000 Duco colors to less than 1,000 without impairing efficiency. This saving was accomplished through the introduction of a workable color system and arrangement of colors.

"Color is far more than a mere adjunct of beauty," according to Mr. Ketcham, who uses it to promote the sale of merchandise.

The "Passing Throng"

Sig. Saxe of the Philippine Cutch Corp. is in Florida. Stanley Weil, Natural Products Refining vice-president, is at Palm Beach.

Dr. Fred. O'Flaherty, director, Tanners' Council Research Laboratory, is recovering from an appendix operation performed Dec. 26.

Charles J. Brand, National Fertilizer Association secretary, presided at the Jan. 20 meeting of the Town Hall of Washington.

Chicago Chemists' Club honored Robert E. Wilson, vice-president, in charge of research for Standard of Indiana, transferred to N. Y. City to assume post of vice-chairman of Pan American Petroleum & Transport.

Cyanamid's Dr. Walter S. Landis finds little time for garden club lecturing, but he did manage to get in a talk on soil conditioning before the Garden Club of Old Greenwich on Feb. 6.

Aubrey Bartlett, well-known southern distributor, president of Bartlett Chemicals, New Orleans, again heads the Pickwick Club of that city.

Joseph Turner is again at Long Key but he is sharing "fish stories" with his grandson, Walter Merrill, Jr., son of Walter Merrill, Sr., sales manager of the Turner organization.

Robert A. Engel of the industrial aromatics division of Givaudan-Delawanna is interviewed in the Jan. 31 issue of *Printers' Ink* and tells how his company has been frequently forced to creating a demand with its prospect's customers. It is a most interesting review of the introduction of the odor element into creative selling.

Members of the du Pont family have a direct or controlling interest of at least 30% in the outstanding common stock of the E. I. du Pont de Nemours & Co., it is shown by reports to the Securities and Exchange Commission, combined with additional available data.

For William Webb Davis, U.S.I., Dec. 31 was a day of mixed feelings. He was retiring after 56 years of service. He was the oldest commuter on the Lackawanna and one of the oldest in New Jersey.

Fred. E. Loud, Murray Oil Products' president, is on an inspection and sales trip to the Coast. Also on the Coast is A. L. Mullaly of Advance Solvents & Chemical.

C. Nick Muessig is retiring from B. F. Drackenfeld Co., colors for ceramics, after 52 years of service.

Stanley Doggett, N. Y. City manufacturer and importer of raw paint materials, is back after a 3-weeks' trip through the middle-west.

George S. Knapp, Imperial Color's general sales manager, is recuperating from a severe attack of diphtheria.

"The Gangplank"

Holidays and annual conferences over, many industrialists are on the high seas, coming or going, bound east or west. Outward bound Feb. 2 on the *Rex* was "Bob" Wishnick, president, Wishnick, Tumpeer, Inc., accompanied by Mrs. Wishnick, eager for his annual European combined business and pleasure trip. Arrival of Lewis W. Douglas, former U. S. Budget Director, and now a Cyanamid vice-president and director, on the *Europa* on Jan. 19, following a sudden trip to England and the Continent, brought the "gangplank newshawks" down the Bay in large numbers but he was non-committal on the reasons that took him off to Europe in such a hurry. On the same ship was Dr. E. F. Armstrong. American chemical industry extends to Dr. Armstrong its deepest sympathy at the loss of his son, Kenneth, in a skiing accident in the Austrian Tyrol on Jan. 2. Kenneth Armstrong, although but 25, had established an enviable reputation in the technical field in England. A. E. Marshall, A. I. Ch.E. president, is in Europe on a 6-weeks' trip. Charles L. Huisking was in the *Olympic* on its mid-January eastbound trip. He will be gone about 2 months.

Frederick W. White, accompanied by Mrs. White, sailed in the *Pennsylvania* on Jan. 12 for California, on the first leg of a visit to Hawaii. Mr. White is now chairman of the board of Mutual Chemical. Reports from England tell of Sir Harry McGowan's departure to South Africa for a 2-month stay. Sir Harry is the head of the British I. C. I.

Prof. Harold C. Urey, discoverer of heavy water and winner of the Nobel Chemistry prize, sailed Feb. 2 in the *Gripsholm* for Sweden, where he will deliver the Nobel Address before the Swedish Royal Academy of Science on Feb. 14, and will receive a check from the King of Sweden worth approximately $25,000-$30,000, based on present exchange rates. Prof. Urey was honored at a farewell dinner by the members of the Chemists' Club (N. Y.) on the night previous to his departure.

Chemical industry was represented in the recent sinking of the coastwise vessel *Lexington*. Alfred Katz, vice-president of Colloids, Inc., Newark, N. J., lost his car but saved his life.

A very interesting person is The Earl of Lytton who is chairman of Palestine Potash, Ltd., and who is here for a short trip.

Once again the copper men are here. Fernand Pisart, in charge of sales for Union Miniere du Haut Katanga, was a *Bremen* passenger last month.

A. Olivier, who formerly represented Produits Chimiques du Limborg, Belgian producer of precipitated calcium phosphate in N. Y. City, but who has been in Brussels for the past year, was a January westbound traveller. How long he remains here is still uncertain.

Louis D. Hungerford, Cataract Chemical export manager, left for a 3 month European trip on Jan. 30.

New Products

¶ *Du Pont Announces a New Industrial Explosive — Goodrich Has a New Plastic—Jungmann Markets New Type Lecithin—*

A revolutionary new blasting material for use in quarries and in other blasting operations such as stripping, was announced at the Eighteenth Annual Technical Section Convention (Jan. 22) of the Explosives Dept. of du Pont. This new product, it was stated, cannot be detonated by the strongest commercial blasting cap, by impact, by flame, nor by shooting a rifle bullet into it. In actual use it is exploded by means of a large diameter cartridge. Further, it is non-headache producing and is rendered absolutely water resistant by being sealed up tightly in a tin can. It is stated to represent the ultimate in safety in so far as a blasting agent is concerned. It represents a very radical departure in the explosives field. This new development has been covered by 2 patents, one for the product itself and the other covering its method of use. It is non-freezing. It will be known as "Nitramon."

New product will be marketed only in large diameters, for example, 4 inch, 4½ inch, 5 inch and 7 inch. It is adapted solely for use in large diameters and has been designed specifically to fulfill as nearly as possible the ideal qualifications for use in quarries and in coal stripping operations. The fact that it cannot be detonated by any of the ordinary means used to detonate explosives makes it safe for transportation in a degree hitherto unknown for any blasting agent.

Definitely Not a Munition

Work on this new explosive has been going on for months. It has been tested both in the laboratory and in the field and by agencies outside the company. It is not a military explosive.

"Koroseal" a Rubber Plastic

Development of a new synthetic plastic material which is said to be superior to natural rubber for the manufacture of a wide variety of products is announced by B. F. Goodrich Rubber laboratory official. Product, which has been given the name of Koroseal, is not expected nor intended at the present time to replace ordinary crude rubber in general use. It will find application, however, in a number of instances where rubber consistency, combined with superior resistance to certain oils and chemicals, is required along with flexing.

Lecithin with New Properties

Jungmann & Co., N. Y. City, is marketing a new type water- and oil-soluble lecithin.

Clay Licenses

The Filtrol Co., of California, under arrangements recently completed, becomes licensing agent for Gray Processes Corp., of Newark, N. J. Three processes, each involving the use of fine clay, will be dealt with by Filtrol as licensor. Included are the Stratford Process, in wide commercial use by Imperial Oil Co. and its subsidiaries; the Osterstrom Vapor Phase Process, developed by Pure Oil; and the Hill-Baylis Process now under development.

New arrangement does not apply to the Gray Process or to the Osterstrom Liquid Phase Clay Treating Process, both in wide commercial use, and represented as heretofore by Gray's present agents, Alco Products and The M. W. Kellogg Co., both of N. Y. City.

Washington

¶ *Export, Import Statements to Continue—Is FHA a Success?—More Trade Agreement Hearings Announced — New Bills Introduced—*

Commerce Department's Chemical Division will continue publication of import and export statements, according to C. C. Concannon who heads that department of Bureau of Foreign and Domestic Commerce activities.

These statements, most of which have been published for years, cover the whole range of trade in chemicals and allied products, including coal tar products, matches, heavy chemicals and chemical specialties, paint products, naval stores and fertilizers. Imports and exports of each item are given both in quantity and value together with the country of origin and destination.

Mr. Concannon will forward a catalog describing each statement in detail. Requests should be addressed to "Chemical Division," Commerce Department, Washington, D. C.

Reviving Durable Goods Industry

January has yet to indicate any let-up in modernization and repair activity created by the Better Housing Program of the Federal Housing Administration, according to a press bulletin released Jan. 19 by the FHA. "In defiance of a season that is generally a dull one for any kind of building work, loans for modernization and repair purposes are still being reported at the rate of a million-and-a-half dollars a week. It is estimated that the modernization drive has already created more than 200 million dollars worth of work, much of which represents cash expenditures."

While the FHA is sending out optimistic statements, reports from other directions tend to show that the expectations of the Administration of reviving the heavy industries are falling short by rather wide margin. It is pointed out by critics of the Administration that in the last report only $23,000,000 of "renovating loans," and practically no financing for building construction was shown. Answering, the defenders of the Commission state that the effect of the efforts of the FHC will not begin to show until the Spring figures are in.

Hull Pushes On

State Department announces that an attempt at trade agreement negotiations will be made with Italy. Hearing is scheduled for Mar. 11. Mar. 4 is the last day to file written statements. A hearing is scheduled for a possible Finnish trade agreement on Feb. 11.

Following the hearings on Finland and Italy, will come one on Mar. 18 for our largest customer, Canada. Requests to speak at the hearing and all statements must be sent to the Committee for Reciprocity by Mar. 11.

Congress Will Debate—

Among the numerous bills introduced into Congress is one by Rep. S. O. Bland (Va.). Under this measure, importation of fish oil, fish scrap, fish meal and "every kind of sea food product, whether or not specifically named herein" is completely prohibited. A similar bill was introduced into the last Congress but died in committee. It is expected that the present bill will have the same fate.

A bill has been introduced into the House which would bring about the gradual elimination of the herring oil industry in Alaska. Delegate Anthony J. Dimond of Alaska is sponsoring the bill.

H. R. 33 (bill offered by Congressman John W. McCormack to amend Section 600 of the Revenue Act of 1918 so that the tax on distilled spirits would be lowered from $2.00 to $1.10 per proof gallon) is before the Ways and Means Committee of the House.

Rep. John F. Dockweiler (Calif.) is introducing H. R. 1427, a bill to repeal the processing tax on cocoanut oil.

Of course the idea of aiding the grain, and particularly the corn farmer, by legislative action to compel use of varying proportions of alcohol made from grain in gasoline fuel blends has been again resurrected for this session.

TVA Contemplates

U. S. Budget for the fiscal year ending June 30, '36, discloses in detail the fertilizer program contemplated by T. V. A. In justifying its program in fertilizer production, Authority states "research in fertilizer manufacture has developed a process which will be demonstrated in a new plant nearing completion. Thousands of acres of phosphorus bearing land have been leased to secure a supply for the operation of this plant. Arrangements have been made for testing fertilizers and plans have been outlined for its economical distribution. It is believed that such distribution will encourage the use of fertilizers in the Tennesesee River Basin in such manner as to check effectively soil erosion and diminish hazards to navigation which arise from continuous silting."

Examination of the following table shows that provision has been made for building a blast furnace plant, for 2 additional electric furnaces, for the operation of the electric fertilizer plants, for a commercial sized demonstration unit for producing superphosphate, for a rather generous amount of chemical engineering service, in connection with fertilizer production, and other activities.

SUPPORTING STATEMENT NO. 4
FERTILIZER PROGRAM

	Estimated, fiscal year 1936	Estimated, fiscal year 1935	Actual, fiscal year 1934
General administ.	$ 20,000	$ 18,338	$ 17,044
Const. electric furnace, fert. plant	....	903,770	415,996
Const. blast furnace, fert. plant	400,000	700,000	....
Leasing, proving, and development phosphate lands.	20,000	50,000	4,487
Oper. electric fert. plant	1,940,000	970,000	13,634
Design, construct 2 additional electric furnaces	....	120,000	....
Design, construct commercial size demonstration units for producing super-phosphate	500,000	60,000	....
Idle plant maintenance, nitrate plants	50,000	50,000	5,209
Chemical engineering	550,000	227,316	96,772
Field washing plant for phosphate rock	200,000	....	....
Operation of blast furnace plant	200,000	....	....
Coal Research, semiworks plants	100,000	....	....
Engineering, technical service, fertilizer dist.	10,000	....	....
Engineering, economic surveys proposed chemical processes	20,000	....	....
Total	$4,010,000	$3,099,424	$553,142
Less revenues	1,340,000	570,000	....
Net	$2,670,000	$2,529,424	$553,142

Casein Statistics

U. S. imports of casein which formerly represented more than half of this market's requirements have in recent years fallen to a relatively low level; receipts from foreign sources in '34 amounted to 1,491,000 lbs., valued at $142,885, compared with 8,319,800 lbs., valued at $455,000, for the preceding year and 1,475,000 lbs., valued at $57,650, in '32. Peak year was in '28 when 28,650,000 lbs., valued at $3,678,000, were received.

Argentina was the largest supplier in '34, receipts from that source amounting to 1,065,000 lbs., ($79,665); Germany supplied 375,750 lbs., ($59,000); New Zealand, 47,694 lbs., ($3,981); while the balance originated in the United Kingdom.

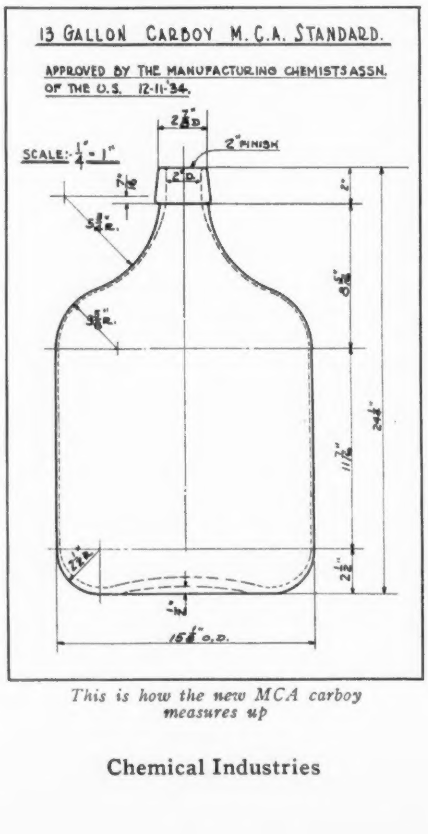
Peak of casein production in the U. S. was in '30 when approximately 42,000,000 lbs. were produced. In '31, the output declined to 35,335,000 lbs. and in '32 was recorded at 24,428,000 lbs. California was the principal casein-producing state in '32, followed by Wisconsin, New York, Illinois, Vermont, Idaho and Minnesota. Other states producing casein included Pennsylvania, Michigan, Oregon, Washington, Ohio, New Jersey, Utah and Massachusetts.

Containers

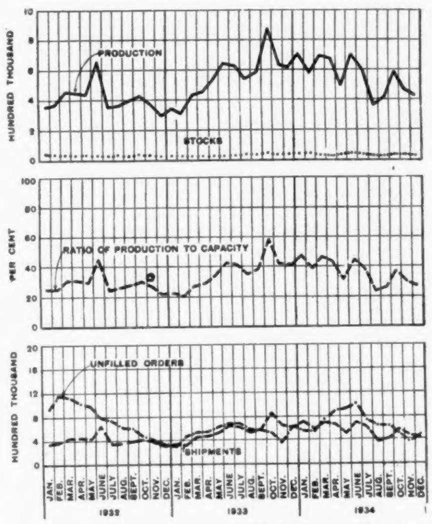
¶ *M.C.A. Adopts a Standard Carboy—Harris with Wilson & Bennett—*

Among the advantages involved in the adoption and use of the new Standard M.C.A. Carboy are:

1. *Longer Life.* The availability of a new carboy of superior quality and greater durability as compared with any carboys herebefore in use, thus not only increasing the life of the container but in addition reducing the container cost for products shipped therein and the amount of breakage and hazard. 2. *Economy of Production.* The adoption of a standard carboy will result in the elimination of waste in production of three different and distinct types of design. The amount of culls resulting from the new standard carboy will be minimized due to the new design being better adapted to the exacting requirements of the carboy manufacturer. Greater skill is acquired by the operators in the manufacture of a single type. The elimination of the narrow mouth—1½" x 1¾"—carboy will reduce waste in manufacture and also reduce the time from the blowing of the carboy to the introduction into the annealing oven or lehr. 3. *Interchangeability.* A standard carboy in the chemical industry will make all carboys interchangeable. It will eliminate the accumulation of "stranger" carboys of different sizes at the chemical plants and the trouble and difficulty of returning these to the original owner for credit. 4. *Ease of Handling.* A standard carboy also has advantages for both rail and truck transportation not possessed by the three present types which vary substantially in dimensions. It is confidently believed that breakage losses will decrease and consequently damage and breakage claims against the carriers will likewise decline which may result in better and more favorable rating in the freight tariff.



This is how the new MCA carboy measures up



—U. S. Census Bureau
Trend in steel drums pictured graphically

The M.C.A. specifications for the standard carboy are as follows:

Capacity—13 United States gallons.

Shape—Straight-side type with curvatures as follows:—Neck (shoulder to lip), 5¾ inch radius; top shoulder, 3⅝ inch radius; bottom shoulder, 2½ inch radius; outside diameter of straight side, 15⅛ inches; overall height of bottle, 24¼ inches.

Lip—Inside taper must be kept to a minimum; top must have a flat, smooth surface; inside diameter, 2 inches; height (approximate), 2 inches; thickness of glass at top (approximate), 7/16 inch.

Glass distribution—Bottom, should be kept as evenly distributed as is practical: ½ inch is considered a satisfactory average thickness. Sides, minimum thickness at the thinnest point, 1/16 inch.

Weight—Minimum, 23 pounds.

Annealing—Interval between blowing of bottle and delivery to the oven or lehr should be as short as possible; bottle must be thoroughly annealed.

Marks—Additional to the required, embossed marks on the bottom of the bottle shall be the following:—"M.C.A. Std."

M. F. Crass, Grasselli, is chairman of the association's carboy committee which directed the work of investigating the standardization of a carboy. T. P. Callahan, Merrimac Chemical, served as chairman of the special committee for the development of a standard carboy.

From Chemicals to Containers

John P. Harris, well-known chemical engineer and for the past 8 years Chicago manager for Industrial Chemical Sales, is now on the staff of Wilson & Bennett Manufacturing Co., maker of steel containers.

American Can's muchly-rumored lacquered beer cans for Kreuger Brewing are said to be about ready to go into commercial scale production.

Construction

¶ Resinox Doubles Plant Capacity —Givaudan Plans New Factory— Other Construction News—

Resinox is doubling the plant capacity of the Edgewater, N. J., plant. Demand for Resinox molding powders is reported increasing at a very satisfactory rate. Resinox is jointly owned by Commercial Solvents and Corn Products.

Givaudan interests plan to erect a new aromatic chemical plant near Belle, W. Va. Company will be known as Givaudan-Virginia, Inc.

Pittsburgh Plate Glass is "practicing what it preaches," and is spending $1,500,000 on plant expansion and modernization.

Titanium plant at Sayerville, N. J., being erected by the National Lead at a cost of $3,000,000, is rapidly approaching completion.

The Goodrich-Gamble Co., manufacturer of proprietary medicines, pharmaceuticals and insecticides, is doubling the capacity of its plant at 1837 University ave., St. Paul, according to an announcement by F. A. Mayer, president.

Moves

¶ Mathieson Goes to the Lincoln Bldg.—Krebs to Wilmington— Others in New Addresses—

Mathieson Alkali is now in new offices in the Lincoln Bldg., N. Y. City.

Company occupies the major portion of three floors at the new address. The 47th floor where the reception room is located contains the offices of E. M. Allen, president, and other executives, including E. A. Hults, vice president in charge of operations.

Sales and traffic departments are located on the 46th floor, including the office of J. A. Kienle, vice president in charge of sales. In addition to the technical library, the advertising, development, research, and miscellaneous departments are all located on the 48th floor.

This is the 7th chemical firm to locate in the Lincoln Bldg. Other chemical companies located at this address are: Air Reduction; Atlas Powder; John A. Chew; Hooker Electrochemical; Michigan Alkali, and U. S. Industrial Alcohol Co.

Krebs Returns to Wilmington

Krebs Pigment and Color (main office, Newark, since '31), plans to announce that beginning with April 1, it will transfer its general offices to 1007 Market st., Wilmington. The Krebs Pigment now operates plants at Newport, Del.; Baltimore, Md., and Newark, N. J. It is erecting a new plant at Edgemoor, Del., for the manufacture of titanium dioxide and extended titanium pigments. Plant is expected to be in operation in the early summer.

Chicago office of Struthers-Wells Co., manufacturers of chemical process equipment, is now located in the People's Gas Bldg., 122 S. Michigan ave.

General Ceramics' N. Y. City offices are now located in the RCA Bldg., Rockefeller Center.

Calco Chemical is moving Southern office and laboratory to its own new building at 1112 South Boulevard, Charlotte, N. C.

A. Giese & Son, N. Y. City importer and dealer in filter papers, is now at 121 E. 24th st.

The A. G. Watt Co., Cleveland jobber, is in new offices in the Keith Bldg.

Plants

¶ Expanding Uses for Nickel— Carbide's New Plant Almost Ready—Work at Baton Rouge Resumed—

With industry turning more and more towards iron free chemicals in the production of a variety of products, a substantial increase in the use of equipment made of nickel and nickel alloys is reported from many sections of the chemical field according to the annual sales summary of International Nickel.

"Producers of caustic and phenol, both of which are especially susceptible to contamination by most metals, were among the most important users of nickel and nickel-clad steel during '34," summary reports.

"Increasing demands also came from producers of alum, especially for paper making, another field in which protection against iron contamination is essential. One of the largest manufacturers in this field employs Monel metal for crystallizers, agitators, conveyors, chutes and centrifuges. Another has found nickel-clad steel particularly satisfactory for floor moulds on which blocks of alum are cast."

Carbide's new synthetic chemical plant at Whiting, Ind., is expected to be ready Apr. 1. Gases from Standard Oil of Indiana's adjacent plant will be used as raw materials.

Strike of workers engaged in construction of Solvay's new Baton Rouge alkali plant ended Jan. 14 after a week of delay. A compromise was effected on wage scales.

Dow Chemical is donating land for a 5,000 acre reforestation plan near Mt. Pleasant, Mich.

Frank Belli, a workman in Oldbury Chemical's Niagara Falls plant was injured seriously on Feb. 1.

More fortunate were the Hooker research employees, an explosion taking place when the building was unoccupied.

Employment Statistics

A comparison of conditions at the close of '34 with those of the same period in '33, by the National Industrial Conference Board, shows increases of 3.1% in employment and of 3.6% in the average number of hours worked per week per employee with a consequent increase of 6.7% in total man-hours. Even larger gains were noted in the earnings of employed workers. Their average hourly earnings rose 7.8% and average weekly earnings, 11.5%. While the rise in the cost of living during the year nullified part of this nominal gain, real weekly earnings were still 6.6% higher than a year ago.

A retrospect view of the situation at the end of 1929 reveals some interesting facts. There were 20.0% fewer workers employed, total payroll disbursements were 39.8% less and total man-hours worked were 40.0% less at the end of '34 than in Dec., '29. Average hourly earnings of those at work, however, were 0.5% higher, and while average nominal weekly earnings had declined 24.9%, real weekly earnings had fallen only 6.8% because of the decrease in the cost of living during the 5-year period. The average work week numbered 24.9% fewer hours.

Fine Chemicals

¶ Tartaric and Calomel Lower— Seasonal Items in Good Demand

Business in the fine chemical field moved along at a rapid pace last month, particularly in the seasonal and pharmaceutical items. The price structure is firm, aside from competitive situations in tartaric (off 1c), and calomel (3c). Glycerine continues strong, with stocks none too large. Weakness developed at the close of the month in vanillin, resulting in substantial reductions. A stronger tone was noted in iodine and the iodates, although Chile and Japan are reported in a tussle over the crude iodine markets in the Far East and to a lesser extent in other parts of the world. Bromides were items reported by producers to be in good demand.

Important Price Changes

	Jan. 31	Dec. 31
ADVANCED		
None.		
DECLINED		
Acid tartaric	$0.24	$0.25
Calomel	1.05	1.08

Heavy Chemicals

¶ *Chemical Consumption at High Levels—Liquid Caustic Revised in Metropolitan Area—Mathieson's Lake Charles Plant Starts Operations—*

Industrial chemical consumption in the month just past exceeded the comparable figures for January, '34, by a rather wide margin. Demand picked up immediately after the holiday period and continued extremely heavy for the first 3 weeks of the month. Some slackening off was reported in the final week caused by labor uncertainties in some of the important consuming industries, notably glass. Purchasing was heavy in the automotive field (including, of course, plating chemicals), but was rather mixed in character in textiles and tanning. The Akron rubber district was busy.

Alkali producers started the new year with conditions better than in the final half of '34. Increased activity in textiles, particularly in rayon, will require considerably larger quantities of caustic. Satisfactory glass consumption in bottle making and automobile industries will take a normal amount of ash. In addition, there is a good chance of improvement in home building which will also bring orders for glass.

Anhydrous Sodium Sulfate Lower

A highly competitive condition has arisen in anhydrous sodium sulfate in the past 60 days and was further aggravated in the last month, prices being slashed to record low levels. Some of the important zinc salts are lower, due largely, of course, to further weakness in the metal. The strength in the market for antimony metal continues both abroad and here and brought about a ½c rise in sodium antimoniate. The fractional decline in sodium silicofluoride was said to be the result of rather stiff competition between imported and domestic material.

The schedule at present on domestic anhydrous sodium sulfate is given: 5 tons to and including carloads, bags, $1.15 per 100 lbs., with the barrel price $1.25 per 100 lbs. Less than 5 tons was listed at $1.40 per 100 lbs. in bags and the barrel price was $1.50 per 100 lbs. Prices applied delivered customer's door within the metropolitan zones of N. Y., Philadelphia, Baltimore, New Haven, Boston, Albany, and f.o.b. all other destinations in territory east of a line drawn from Buffalo, N. Y., through Pittsburgh, Pa. East to the Maryland line including the state of Maryland and District of Columbia. In the territory south and west of this line, freight is equivalized with competitive producing points.

Important Price Changes

	Jan. 31	Dec. 31
ADVANCED		
Calcium arsenate, South dealers	$0.06½	$0.06¼
Sodium antimoniate	.10½	.10
DECLINED		
Sodium Hydrosulfite	$0.19	$0.19½
Sodium silicofluoride	.04½	.04¾
Sodium sulfate, anhyd.	1.15	2.00
Zinc ammonium chloride	.0465	.05
Zinc chloride, gran.	.05	.05¾

Despite the uncertainty on the labor outlook chemical producers are optimistic on the possibilities of further tonnage increases. As the month closed, the likelihood of a strike in the glass industry seemed to be more remote and the same statement could be applied to the automotive and steel industries with equal truthfulness.

N. Y. Liquid Caustic Prices

A readjustment in the Metropolitan Area l.c.l. schedule on liquid caustic was placed in effect Jan. 25. The new schedule is as follows:

In tank wagons	$3.05 per 100 pounds
1 to 4 drums at a time	3.75 per 100 pounds
5 drums and up	3.50 per 100 pounds

All prices are basis 76% Na_2O, and cover delivery to the buyer's plant if located in the Metropolitan New York area, which includes: Manhattan, Bronx, Kings, Queens, Newark, and Northern New Jersey. For Westchester, Staten Island and Nassau, the prices are 10c per 100 lbs. higher than the above schedule. For Suffolk, price is 20c per 100 lbs. higher than the above schedule.

Shipments From Lake Charles

Mathieson Alkali's $7,000,000 plant at Lake Charles, La., started to ship on Feb. 1. This is the 2nd of the 3 new alkali plants located in the Southwest to come into production. Southern Alkali's Corpus Christi plant has been in operation now for several months and Solvay's Baton Rouge plant is expected to be in production shortly.

Several important innovations in alkali production have been incorporated in the new plant which are said to radically reduce labor and handling costs and to permit exceptionally close control over manufacturing operations with resulting improvement in quality standards. (See the Rotogravure Section, this issue, for photographs of the new plant.)

Sulfur Dramatized

Just about everything one might wish to know concerning sulfur is picturized interestingly in an educational motion picture film recently prepared under the supervision of the Bureau of Mines, in cooperation with an industrial concern. Copies in 16 or 35 mm. sizes may be obtained for exhibition purposes by applying to the Pittsburgh Experiment Station of the U. S. Bureau of Mines, Pittsburgh, Pa. No charge is made but the exhibitor is asked to pay transportation charges.

Carus Will Introduce

Carus Chemical, large domestic producer of potassium permanganate, is about ready to make permanganates of calcium, zinc, and soda and within a short time expects to add permanganates of magnesium and barium.

Colloidal Aluminum Linoleate

A new chemical sponsored by Colloids, Inc., Newark, N. J., is colloidal aluminum linoleate, for use in inks. Qualities claimed in commercial split-fountain runs are savings in cost, smoother laying, clearer plates, and less tendency to offset. Chemical is entirely colloidal, without crystalline form, and contains a high percentage of chemically fixed available moisture.

Good News for Insecticide Makers

Unless unfavorable weather intervenes chinch bug outbreaks even more severe than '34 may be expected in the Middle West this summer, according to a cooperative study recently completed by the Dept. of Agriculture. Study shows that hibernating chinch bugs in the corn belt are now more abundant than in January, 1934, and the infested area is larger. The states most severely infested are Iowa, Illinois, Missouri and Kansas.

Chemical Method Wins

Trustees of the sanitary district of Minneapolis-St. Paul have adopted a chemical precipitation method of sewage disposal. Chemical precipitation recommendation had been made in a report by the PWA Board of Review.

Those Arsenate Prices

The Agricultural Insecticide and Fungicide Code Authority is asking NRA to continue the 90-day price emergency on arsenicals, declared Nov. 5. Figures submitted show that 50% of the sales of lead arsenate are made in the February-April period.

A Worthy Distributer

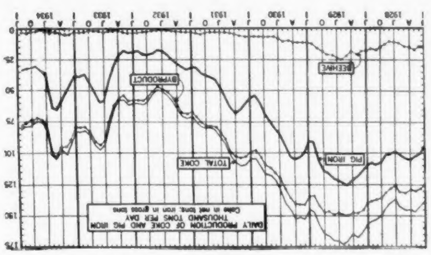
T. Worum, formerly in charge of the naval stores business of W. H. Barber Co., Minneapolis, is forming with Gerald O'Brien the O'Brien-Worum Co., St. Paul, to deal in chemicals, naval stores, solvents and oils.

Worthington on the Coast

Worthington Pump and Machinery has recently established a Pacific Coast regional headquarters at Los Angeles, which will center jurisdiction and development of the corporation's business in the western terrain now included in the coverage of the Worthington district offices in Seattle, San Francisco, Los Angeles and El Paso.

Coal Tar Chemicals

¶ Coke Operations Advance—Toluol in Heavy Demand—Outlook for Consumption is Favorable—



Coking operations

Production of coke in '34, according to preliminary reports received by the Bureau of Mines, was 31,830,210 net tons, an increase of 15.4% when compared with '33. Chief cause of the increase in coke production was the greater activity of blast furnaces, the output of pig iron for '34 increasing 20.4% above the level of '33. Reflecting this activity, coke plants affiliated with iron interests increased their output 19.2%, while production at merchant plants increased 10.0%.

Figures for byproduct coke are based on monthly reports received currently from each producer and are subject to very slight revision on the basis of final detailed reports for the year as a whole. Figures for beehive coke are estimates based on weekly shipments reported by 12 of the principal railroads serving the beehive ovens.

Three Months of Increases

For 3 successive months production of coke has shown an advance over the preceding month. Total output of byproduct and beehive coke for December amounted to 2,501,441 tons, or 81,339 tons per working day, an increase of 2.7% when compared with the November rate of 79,201 tons. Gain was a reflection of the improvement in the iron and steel industry, where the daily rate of pig iron output increased 3.9% during the same period.

December Rate

Production of byproduct coke for the 31 days of December was 2,417,841 tons, an average of 77,995 tons per day. In comparison with the November rate of 75,582 tons there was an increase of 3.2%. All of the December increase occurred at furnace plants, where a rise of 7.6% in average daily output was reported; at merchant plants the daily rate declined 2.4%.

Production of beehive coke declined sharply, average daily production for the month being 7.6% less than that of November. Stocks of coke at furnace plants increased 4.4%, while those at merchant plants decreased 3.1%. At the rate of production in December, total byproduct stocks were sufficient to last 43.8 days, in comparison with 45.2 days' supply at the close of November.

Automotive Trend

With automotive production for January around 300,000 units it is not at all surprising that a sharp pick-up in toluol shipments should occur. Solvent naphtha and xylol also moved out in greater volume, but benzol shipments were not up to earlier anticipation. Naphthalene market was a quiet affair, with some price instability, and a slightly competitive situation was noted in cresylic acid. Creosote oil prices, on the other hand, were specially firm.

Intermediates were in good demand, and dye producers reported good call, despite some irregularities in the textile field. Further improvement is anticipated during February.

Further gains in coking operations will probably be registered in the next 60 days. Steel activity, now at 56%, has shown consistent gains for 13 or 14 weeks and, unless a strike interferes, the industrial outlook would appear bright for further advances in the first quarter. Although this would bring an increase in raw materials, the trade is certain that this will be more than offset by increases in demand for solvents, intermediates and dyes, and that stocks of many of these will continue to be scarce. In the automotive field a production of a million units is fully expected in the first quarter. This, combined with the accompanying improvement in the tire output, means a large tonnage to the coal tar industry without taking into consideration the other large users of coal tar chemicals. The present price stability in most items is likely to continue through the quarter.

U. S. '34 Imports

Value of U. S. coal-tar dye imports entered for consumption during '34 continued to increase, being 5% greater than for the preceding year and 43% in advance of that for '32. A part if not all of the invoice value increases in '34 was probably due to dollar depreciation as the quantity imported during that period was the lowest in 3 years.

A total of 3,392,500 lbs. with an invoice value of $5,033,300 was entered for consumption during '34 compared with 4,288,200 lbs., valued at $4,792,000 in '33, and 3,904,600 lbs. valued at $3,517,000 in '32. Unit invoice value of $1.48 in '34 compares with $1.11 in '33 and $0.90 in '32, statistics show.

Germany and Switzerland supplied practically all coal-tar dyes imported with only small amounts coming from England and elsewhere. Germany was supplying approximately 58½% of the total in January, Switzerland more than 40%, and England, a little more than 1%. As the year advanced, however, there was a tendency for Switzerland to obtain a larger share of the trade until in December when Germany and Switzerland were supplying approximately 50% each with less than 2/10ths of 1% originating in England.

Practically all of the 3,363,000 lbs. of coal-tar dyes imported for consumption during the year were entered through the port of New York, with Boston, Newark, Philadelphia and Albany each receiving a few small consignments.

Imports of aromatic chemicals declined considerably, both in quantity and value, only 24,350 lbs. valued at $48,725 being entered for consumption during '34 compared with 46,050 lbs. valued at $74,200 for the preceding year. Receipt of coal-tar medicinals, photographic developers, intermediates, and other coal-tar products increased, however, reaching 1,933,370 lbs. valued at $1,957,800 in '34 against 1,808,575 lbs. valued at $1,187,000 for '33.

Japanese Benzol

Japanese manufacture of benzol has increased to such an extent during the past few years that the country is practically self-sufficient in this commodity, serious efforts are being made to perfect various processes which could be employed to produce large quantities should they be needed. Benzol now being produced in Japan is obtained chiefly as a by-product of the coke industry but as the potential output depends almost entirely on the volume of coke manufactured, other methods are being studied.

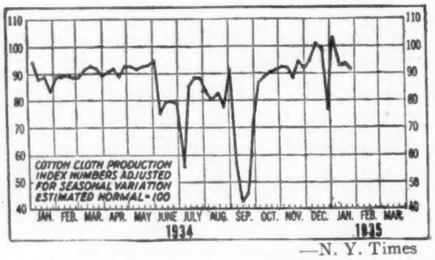
An engineer of the Japanese Fuel Institute recently published his studies on a method of extracting benzol as a by-product of the coal distillation industry. It is claimed a potential output of 120,000 metric tons is possible by this process, if the entire domestic output of coal tar, which is reported as 150,000 metric tons, is utilized, report states.

Large gas companies, which heretofore have given little thought to the extraction of benzol from city gas are now installing equipment for its recovery and as the coal consumption in the gas industry is estimated at 1,300,000 metric tons, amount of benzol which may be obtained from this source is expected to reach 9,000 metric tons. Experiments are also being conducted with a process of synthesizing benzol from carbide and from natural gas. Benzol production in '34 is estimated at 32,750 metric tons compared with 26,001 tons during '33 and 17,100 metric tons for '32.

Textile and Tanning Chemicals

¶ ***January Trend Irregular—Prices Are Steady—Uni-Tan Extract Formed—***

Dye purchasing was done in the past month on a "hand-to-mouth" basis, but the total sales for the month compare favorably with January, a year ago, and, in fact, with any month in the last quarter



—N. Y. Times

of '34. Activity in the textile field was highly irregular, some lines and some locations being extremely busy, while others were operating at a much slower pace. Rayon was a particularly bright spot. Cotton production, after a sudden spurt in the first week of the month, dropped to lower levels in each of the succeeding 3 weeks. In the dyeing and finishing centers some slackening was appearing at the close of the month, but operations are still being maintained at encouraging levels. With the year-end period over tanners increased operations slightly. In the shoe-production sections a noticeable improvement was in evidence in the last 2 weeks of the month.

Price changes were few and relatively unimportant. Egg yolk was "upped" a cent as stocks became scarce. Bichromate shipments were in better volume, producers report, and the natural tanstuffs markets were active with a great deal of replacement buying in evidence. With uncertainty over the ultimate decision on gold by the U. S. Supreme Court, importers, not only of tanstuffs, but importers of all kinds of materials, are "playing them close to the chest," as the saying goes, and are extremely hesitant about assuming a long-term position. The net result of this rather novel situation is a general scarcity of spot stocks of imported items generally and further likelihood that this condition will become more acute before it gets better.

Immediate outlook in the textile and tanning industries is bright. Most cotton production mills have sufficient orders to keep them going at high manufacturing levels through February and bookings on rayon for the first quarter are in excellent volume. The outlook in silk and wool is not quite so bright. The production of rayon in '34 reached 210,331,000 lbs. and exceeded by 1% the '33 record of 208,530,000 lbs. In certain authoritative quarters, an increase of 10,000,000 to 15,000,000 lbs. is expected this year. The theory of a "2-year cycle" in the textile field is generally accepted and '35 is, therefore, looked upon as likely to be a favorable one.

Important Price Changes

	Jan. 31	Dec. 31
ADVANCED		
Egg yolk	$0.47	$0.46
DECLINED		
Myrobalans 51	$25.00	$27.00
52	15.25	15.50

Shoe Production

If shoe production for the first quarter reaches the totals of the first quarter of last year most manufacturers will be satisfied. Production in the first 11 months of '34 exceeded '33 (11 months) by 0.3%. However, activity declined in the last 3 months of '34 below the corresponding '33 levels, and it is as yet not at all certain that activity is close to rate prevailing in January-February of either last year or in '33.

Southern Exposition

Textile chemical specialty manufacturers are looking to the 11th Southern Textile Exposition, Greenville, S. C., on Apr. 8-13, with a great deal of confidence. A large number have taken space.

Replaces Chicago Extract

Uni-Tan Extract Corp. of Port Newark, N. J., purchases all the formulae and other valuable processes of the former Chicago Process Co. of the same city. New concern has placed upon its staff 2 of the important experts who accomplished much to bring about the prosperity enjoyed by the Chicago Process concern. One of these is D. V. Payne, who holds a high post with Uni-Tan. The other is A. McCormick, who had direct supervision of the manufacture of all the products specialized in by Chicago Process and who will perform similar duties for Uni-Tan Extract.

New Items

General Dyestuff, selling agent for General Aniline, is offering Prestabit Oil V, a new dyeing and finishing assistant with a number of new and novel features. Company is willing to supply full details to those interested.

Carbic Color & Chemical is introducing 2 new chrome printing colors to the trade.

Extract Budget, $6,950

NRA approves a $6,950 budget for the support of the code authority of the tanning extract industry (Apr. 9, '34 to June 1, '35).

Chemical Specialties

¶ ***On to Chicago for Packaging Hints — New Products — News Items Briefly Summarized—***

Every important phase of packaging, packing and shipping will be covered by a brilliant list of speakers at the 4-day Conferences and Clinics to be held in conjunction with the 5th Packaging Exposition, Palmer House, Chicago, Mar. 5 to 8, inclusive.

The opening day—Progress Day—will be featured by an address on "Governmental Activities Relating to Packaging." Irwin D. Wolf of the Kaufmann Department Stores will preside. On the same program, William Guyer, sales promotion manager, Seagram Distillers, will describe how "A New-Old Industry Looks at Packaging." Other talks will deal with merchandising research and coordination of packaging effort. Program will be summarized by D. E. A. Charlton, editor, *Modern Packaging*.

Annual banquet will be held on Mar. 6. Presiding will be W. J. Donald, managing director, National Electrical Manufacturers Association. Presentation of A. M. A. Awards for Distinctive Merit in Packaging will be made by L. R. Boulware, Easy Washing Machine Corp. and a vice president of the American Management Association. Wolf Trophy will be presented by Mr. Wolf.

Lead Tolerance Announced

The Secretary of Agriculture has reduced from 0.019 grain to 0.018 grain per pound of fruit quantity of lead permitted in spray residue on apples and pears. Lower tolerance will be applied to the '35 crop, and the Food and Drug Administration will proceed against violators.

New Specialties

Rex Products, Toledo, is marketing R.R.C. Drain Opener.

Gap is a new polishing and cleaning material for enamel, etc., brought out by Pawley Chemical, Cohoes, N. Y.

Adams Products, St. Paul, is marketing Florawax in a new bottle and label. Owens-Illinois supplied the bottle and design.

Notes of the Industry

John T. Stanley, 92, president and founder of the John T. Stanley soap firm in N. Y. City, on Jan. 7.

Oakite advertising in the industrial field will be handled by Rickard & Co., N. Y. City and in the household field by Calkins & Holden, N. Y. City.

The Sanitate Corp., Baltimore, Sanitate cleaner, appoints The Emery Advertising Co. of that city, as advertising counsel. Newspapers will be used.

S. Judson Dunaway forms a new corporation which has purchased The Expello Corp., Dover, N. H., Expello moth products. Company will continue to operate under the same name, with Mr. Dunaway as president and treasurer. Walter L. Locke, plant superintendent of the old company, has been made vice-president and secretary of the new corporation.

Manufacturers of household specialties are requesting inclusion under the basic code for the grocery manufacturing industry.

Sale of Carbide's anti-freeze material, Prestone, is reported to have been 50% ahead in '34 over the '33 figures.

The Tobacco By-Products & Chemical Corp., Louisville, is planning an intensive advertising campaign on its insecticides.

Soap

R. R. Dueprec, P.&G., again heads the Association of American Soap and Glycerine Producers. He was elected with other '34 officers for the '35 term at the annual meeting held Jan. 9 in N. Y. City.

P. & G. is acquiring business and properties of J. Barcelou & Cie., Ltd., of Montreal, Quebec, one of the important independent soap manufacturers in Canada. Purchase was for cash, but the amount was not revealed.

Walt Disney's Mickey Mouse, Peter Pig and Pluto are now available in standing soap figures. Packed in sets of 3 in individual decorated packages by the Lightfoot-Schultz Co., N. Y. City.

Tips is a soap in a new form which resembles shredded cocoanut. It is made of vegetable oils and contains no animal fats and is marketed by The Prouty-Bowler Soap Co., Des Moines, Iowa.

P. & G. is also reported expanding on the Philippine front through the purchase of the Philippine Manufacturing Co., Manila, the largest soap maker on the Islands.

Soap and Glycerine Code Authority is asking approval of a $60,000 budget for '35.

Oils and Fats

¶ Sharp Price Advances Again Features the Market—Cottonseed Goes Still Higher—Linseed Markets Quiet—

The oils are really supplying the "fireworks" in the chemical industry. The steady advance in prices over the last few months was continued with renewed strength in January, carrying many of the more important vegetable, animal and fish oils to new highs for the past 3-year period. Nor does there seem little likelihood of any change in the picture, unless the decision of the U. S. Supreme Court on the controversial gold clause should go against the Administration. Even then it is expected that legislation will be immediately passed endeavoring to support the devaluation of the dollar.

Indicative of the sharp rise in oils in January is the rise in the Fats and Oils Index of the National Fertilizer Association from 71.6 on Dec. 29 to 80.0 on Jan. 26. On the latter date the Index showed a gain of 77% over the figure for the corresponding figure for Jan. 25, '34. The Oils and Fats Index, compiled by the Bureau of Raw Materials for American Vegetable Oils and Fats Industries, stood at 91.2 for December, '34, as against 70 for December, '33.

Although the price trend was up sharply in January, buying in most items, surprisingly, remains rather routine in nature. The financial difficulties of a London commodity house, which affected the shellac market so seriously, did not cause a ripple in the oil markets here, although it was reported that the firm was decidedly on the short side of the market on several items. It is hardly necessary to point out individual items in the general advance. It is almost safe to say that all items closed out the month higher and all for the same general reasons.

Cottonseed Oil

Cottonseed trading was rather irregular last month, interest of the speculative crowd seeming to "blow hot and then cold." For a few days at a time the market would quiet down and then suddenly resume further advances. The decline in speculative activity in other commodity markets and in the stock market, because of the uncertainty over the gold clause decision of the Supreme Court, also tended to discourage a number of operators from extending their holdings in cottonseed and near the close of the month the volume of trading slumped noticeably. Nevertheless, a net gain in prices was made during the month. A comparison of prices follows:

	Bleachable Prime Dec. 31	Summer Yellow Feb. 1
Feb.	10.55-10.70*	11.00*
March	10.60-10.61	11.09-11.14
April	10.58-10.60	11.08-11.18
May	10.70	11.11-11.15
June	10.70-10.80	11.08-11.18
July	10.78-10.80	11.15-11.18
August	10.80-10.90	11.18-11.23
Crude, Southeast	9.25*	10.00*
Texas	9.25	10.00
Valley	9.25	10.00

Consumption of cottonseed oil continues to run ahead of a year ago, although the consuming pace is apparently slackening somewhat. December use, according to Census Bureau figures, represented 250,347 barrels of 400 lbs. each. This compares with 309,157 barrels used in November, and 190,823 barrels consumed in December, '33. Total consumption for the first 5 months of the 1934-'35 season totalled 1,767,388 barrels, compared with 1,184,563 in the like period of the previous season.

* Cents per lb. in tanks.

Linseed Oil

Flaxseed production in each of the leading flax producing countries, excepting the U. S. and possibly Russia, is larger this year than last, according to the Bureau of Agricultural Economics. Production in foreign countries reporting to date totals 95,856,000 bu. compared with 82,448,000 last season. U. S. crop at 5,253,000 bu., on the other hand, is the smallest since '19. Bureau reports that although information is not available regarding Russian output, acreage sown to flax for seed in that country this season is 1,100,000 acres less than last season.

Bureau of the Census announces there were 24 mills in the U. S. which crushed flaxseed during the quarter ending Dec. 31, '34, reporting a crush of 127,944 tons of flaxseed and a production of 90,253,182 lbs. of linseed oil. These figures compare with 189,266 tons of seed crushed and 133,905,936 lbs. of oil produced for the corresponding quarter in '33; 139,934 tons of seed and 90,987,258 lbs. of oil in '32; 199,149 tons of seed and 130,478,580 lbs. of oil in '31; and 206,944 tons of seed and 131,256,804 lbs. of oil in '30.

Stocks of flaxseed at the mills on Dec. 31, '34, amounted to 51,836 tons compared with 75,171 tons for the same date in '33, with 87,384 tons in '32, with 104,192 tons in '31, and with 125,218 tons in '30. Stocks of linseed oil reported by the crushers were 78,198,651 lbs. on Dec. 31, '34, compared with 119,656,272 lbs. for the same date in '33, with 90,409,811 lbs. in '32; with 123,626,578 lbs. in '31, and with 83,035,584 lbs. in '30.

Trading in flaxseed was generally quiet in primary centers last month, and the net price changes were exceedingly small as the following comparison of prices at Duluth, Winnipeg and Minneapolis indicates:

	Dec. 31		Jan. 31	
	May	July	May	July
Duluth	$1.87½	——	$1.87	$1.87½
Winnipeg	1.46⅜	1.45½	1.46	1.44½
Minneapolis	1.86½	1.88½	1.85	1.87

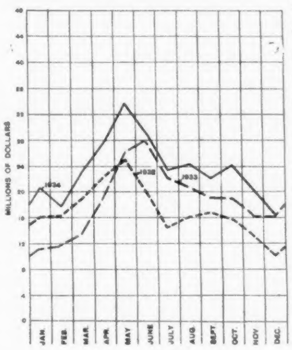
Trading in linseed was also very slow and the change in quotations relatively unimportant. Closing quotations on Dec. 31 and Jan. 31 compare as follows:

	Dec. 31	Jan. 31
Boiled, tanks	$0.085	$0.089
carlots, cooperage	.091	.095
l.c.l. lots	.095	.099
Raw, tanks	.081	.085
carlots, cooperage	.087	.091
l.c.l. lots	.091	.095

Paints, Lacquers and Varnish

¶ *Paint Makers Prepare for Heavy Spring Season—American Zinc Oxides Lower—*

Outstanding feature of the raw materials markets was a reduction of ½c to ¾c reduction in American process zinc oxides. French oxide prices remained unchanged. The reduction in American erases the increase of last April. Red lead and litharge had fractional losses as the metal sank to lower levels. Despite 2 increases in the stearic acid markets, stearate producers have not as yet advanced prices. In certain quarters it was thought that no revision would be made until the end of March when contracts are up for revision, while in others an early advance in spot prices was momentarily looked for. Domestic casein prices stiffened considerably last month when the statistical picture showed up better and buyers came into the market in greater numbers.



Trend in paint sales

Demand for raw paint materials experienced a gain along a wide front and paint producers are now engaged in building up inventories for heavy spring sales. Lacquer manufacturers are already feeling the effect of the surge forward by the automotive producers.

Building Figures Disappoint

Building operations increased 37.6% in number but decreased 16% in estimated value, comparing December, '34, with the corresponding month of the previous year, according to the Bureau of Labor Statistics.

Construction in 37 Eastern states ended the year with a contract total of $1,543,101,300 for all classes of construction, according to F. W. Dodge Corp.; this was a gain of about 23% over the total for '33, the increase occurring entirely in the sphere of public work. For the final month of '34 the contract volume was smaller than in either the previous month or in December, '33; in fact the total of $92,723,700 was lower than for any month since July, '33. Loss from November, '34, was 17% while the decline from December, '33, amounted to 55%.

Sales of paint, varnish and lacquer chemicals reported to the Bureau of Census by 586 manufacturers totaled $282,462,965 in '34, compared with $222,760,965 in '33 and $203,323,315 in '32. Classified sales reported by 344 establishments totaled $77,614,508 in industrial sales in '34, against $60,140,098 in the preceding year and trade sales of $108,506,469 in '34, against $91,572,769 in '33. Trend is shown graphically.

Important Price Changes

ADVANCED	Jan. 31	Dec. 31
Casein, dom., 20-30	$0.10½	$0.09½
80-100	.11¼	.10½
DECLINED		
Litharge	$0.05	$0.052
Red lead 95%	.06	.062
97%	.06¼	.0645
98%	.06½	.067

A Million Cars in 1st Quarter

Automotive production outlook for '35 is exceedingly promising at the moment. Conservative estimates place first quarter production above a million units. Such a figure, if realized, would be a third better than was the total for the first quarter a year ago and would be the best first quarter since '30. A production of a million cars would be at least 10% above the average first quarter production of the past 12 years and has been exceeded by a substantial margin only in the record-breaking year of '29. There is a divergence of opinion as to what will happen over the balance of the year. Many feel that this fast pace will not be maintained. Over the last 12 years, average production for the first quarter has accounted for 25.4% of the average annual production, while in '34 the quarter's output was 26% of the year's total. On the basis of either of these figures, however, an output of about 4,000,000 for the 12 months' period appears probable.

Ford's production schedule calls for 110,000 cars in each of the first 2 months of the year. If this is maintained the pace will be practically double that held in the same 60-day period last year.

Paint Symposium

A symposium on paint and paint materials will feature the '35 Regional Meeting of the A.S.T.M. to be held in Philadelphia Mar. 6 in conjunction with the Spring Group Meetings of A.S.T.M. Committees scheduled during the 5 days—Mar. 4 to 8. Hotel at which the meetings will be held will be announced in the near future. Program is as follows:

Looking Into the Future—H. A. Gardner, The Institute of Paint and Varnish Research; Preparation, Use and Abuse of Specifications for Paint Materials—P. H. Walker, assistant chief, Chemistry Division, National Bureau of Standards; Protective and Decorative Coatings for Railroads—A. M. Johnsen, engineer of tests and chemist, The Pullman Co.; Paint Testing—C. D. Holley, director of paint research, Acme White Lead and Color Works; Varnish Testing—W. R. Fuller, technical director, Pratt & Lambert; Lacquer and Lacquer Testing—H. E. Eastlack, director, Parlin Laboratory, du Pont; Drying Oils—S. O. Sorenson, chemist, Archer-Daniels-Midland; Zinc Pigments—E. H. Bunce, general manager, technical dept., New Jersey Zinc; Lead Pigments—R. L. Hallett and C. H. Rose, chemists, National Lead; Titanium Pigments—I. D. Hagar, eastern sales manager, Titanium Pigment; Mineral Pigments—J. W. Ayers, director of research, C. K. Williams and Co.; Chemical Colors—A. F. Brown, general manager, Imperial Color Works; Natural and Synthetic Resins—W. T. Pearce, The Resinous Products & Chemical Co.; and Solvents and Volatile Thinners—R. M. Carter, research chemist, U. S. Industrial Alcohol.

Du Pont's Toledo Works

Du Pont, which acquired Mountain Varnish & Color Works plant at Toledo last year in a receivership sale, has practically completed its $500,000 expansion program and 60% of the new equipment is in operation. A. K. Burte, formerly in charge of operations at the company's Flint, Mich., plant, has been placed in charge of the Toledo plant which is now one of du Pont's largest. It is now manufacturing a synthetic resin finish for automobiles which has gained wide use this year. Industrial paints, varnishes and cosmetics also are being made.

Trigg Takes to the Road

N. P. V. & L. A. President, Ernest T. Trigg, will "swing around the circle" in a visit to the western and central local paint, varnish and lacquer associations, Feb. 9 to Mar. 2. Vice-President Wallace F. Bennett will accompany President Trigg on his visits to local organizations in the Western Zone.

President Trigg's itinerary is as follows: Feb. 9th, Cleveland; Feb. 10th, Chicago; Feb. 12th, Denver; Feb. 14th, Portland; Feb. 15th, Seattle; Feb. 16th, San Francisco; Feb. 20th, Los Angeles; Feb. 25th, Houston; Feb. 26th, Dallas; Feb. 27th, Kansas City; Feb. 28th, St. Louis; and Mar. 1st, Chicago.

Smith to New Castle

The George B. Smith Color Corp. plans to transfer its general offices from Springfield, Ill., to New Castle, Pa., within the next 30 days according to an announcement by George B. Smith, president. Company recently took over the defunct Westmoreland Color at New Castle as a unit in the chain of plants operated by the Smith organization.

Naval Stores

Naval stores situation seems somewhat brighter. Prices have strengthened considerably in the past 4 weeks and both the number of inquiries and the actual number of transactions in the primary centers have increased. A more optimistic note on the future trend is sounded in the trading centers. A comparison of prices of turpentine and rosin on Dec. 29* and Jan. 31 indicates to what extent the price improvement has reached, particularly in the paler grades.

* Dec. 31, a holiday.

	Dec. 29	Jan. 31
B	$3.80	$4.00
D	4.00	4.00
E	4.05	4.20
F	4.15	4.65
G	4.25	4.65
H	4.30	4.70-4.75
I	4.35	4.70-4.75
K	4.45	4.75
M	4.45	4.75-4.80
N	4.50	5.15
W.G.	4.80	5.60-5.65
W.W.	5.25	6.20-6.25
X	5.25	6.20-6.25
Spirits turpentine	$0.45	$0.50½

Stocks on Jan. 31 stood as follows in the 2 primary ports:

	Savannah	Jacksonville
Rosin	91,654	144,406
Turpentine	13,919	48,850

Effect on Government Loans

At current market prices there is a decided incentive to withdraw rosins from under government loans and place them on the open market. It is said that nearly 30,000 barrels have thus been withdrawn up to Jan. 31. It is quitely likely that further withdrawals will be made in February. Turpentine, on the other hand, at 50c does not attract repayment on loans, it is said.

Legislative Angles

Giving the 6 months' notice required under the Federal naval stores act, the Dept. of Agriculture has called a hearing to be held in Washington July 16, next, for the purpose of considering changes or modifications in the official U. S. Rosin standards.

Federal loans for the naval stores industry are proposed in a bill introduced in the Senate Jan. 10 by Senator Fletcher (Fla.), under which the RFC would be authorized to give financial assistance to corporations, associations and individuals "to aid in constructing and maintaining facilities for the growing, harvesting, marketing, storing, warehousing and/or processing of forest products." Bill has been referred to the committee on banking and currency.

Solvents

¶ *Solvents and Corn Products Buy Molasses Companies—Solvent Consumption Gains—*

Commercial Solvents, in association with Corn Products Refining, has completed negotiations for the acquisition of Molasses Products and Dunbar Molasses.

Consideration will take the form of a cash payment from funds already on hand and a deferred payment out of profits from the business. No stock will be issued in connection with the transaction. A new company will be formed with capital of about $5,000,000, in which Solvents will have a two-thirds interest and Corn Products one-third. Solvents will supervise the management of the new company. Investment of Solvents and Corn Products in the new acquisitions will be approximately $4,000,000. Both companies are large users of molasses. Acquisition will provide both companies with direct control of important raw materials. It will be recalled Commercial Solvents just recently sold its interest in Krebs Pigment to du Pont for about $7,000,000.

Withdrawals Are Heavy

Lacquer and rubber manufacturers withdrew petroleum solvents in large quantities in January, reflecting the jump in manufacturing schedules placed in effect in Detroit and Akron, following the exceptional successes of the N. Y. and other automobile shows held throughout the country. The anticipations of automotive producers that '35 would prove a good years seem more than likely to be realized. Shipments to other petroleum solvents consuming fields were spotty last month. The price structure remained steady without any major changes even in face of the uncertainties created by the U. S. Supreme Court's decision which rendered void Section 9C of NIRA, a provision designed to give the President power over interstate shipments of "hot oil." A substitute law was immediately introduced into Congress and is expected to receive early consideration, but, in the meantime, the state of unsettlement becomes more pronounced in the petroleum field. However, the decision did not break open the crude market price structure to anything like the degree first expected, and much of the damage first feared did not actually materialize.

The February gasoline allowable was placed at 32,560,000 barrels, a decrease for the month as a whole from 34,750,000 gallons in January, but an increase of 42,000 barrels in the daily production, since February has only 28 days. Daily average for February will be 1,163,000 barrels, against 1,121,000 in January.

Other solvents experienced better demand in January. Sales of industrial alcohol were equal to or in better volume than in January, a year ago. Sale of alcohol for anti-freeze purposes improved somewhat, but prices at retail are highly competitive. The lacquer solvents, butyl alcohol, etc., were firm in price and were moving into consuming channels in satisfactory volume. Still, buying is largely of the "hand-to-mouth" variety. Some competition is reported in ethyl acetate, but no change has been made in published quotations.

Isobutyl Alcohol Revised

On Jan. 30 a new price schedule was placed in effect for isobutyl alcohol, refined. Prices are f.o.b. plant, with freight allowed East of the Rocky Mountains. Tanks are now 10½c; car lots, drums, 11½c; and l.c.l. quantities 12c.

Gums, Waxes

¶ *Shellac Market "Cracks Open"—Other Items Slow—*

The long expected break in the shellac market came suddenly after the first of the year. Prices declined sharply in the primary and London markets, followed closely by quotations locally. The net losses in the domestic market are shown in the following comparison of prices (Dec. 31 and Jan. 31).

Important Price Changes

ADVANCED	Jan. 31	Dec. 31
Carnanba, No. 3, chalky	$0.21½	$0.21
Japan	.06½	.06
DECLINED		
Beeswax, African	$0.21	$0.21½
Candelilla	.10	.11
Carnanba, No. 1, yellow	.35	.36½
No. 2, Yellow	.34	.35½
No. 2, N. C.	.26½	.28
No. 3, N. C.	.22½	.23

	Dec. 31	Jan. 31	Net Loss
Bone Dry	30c	25c	5c
T. N.	23	18	5
Garnet	26	22	4
Superfine	26	21½	4½

For several months the accumulated speculative stocks held in London (310,000 packages) have been getting larger and larger, according to well-founded reports, and in most quarters it was felt that it was simply a matter of time before a downward price revision would become a necessity for there appeared little chance for the usual trade consuming channels to absorb these stocks without price weakness appearing.

A comparison of London and Calcutta prices for Dec. 31 and Jan. 31 indicates the amount of readjustment that has already been made in these centers.

	Dec. 31	Jan. 31
T. N. Calcutta	18¾c	15⅜c*
March position, London, T. N.	85s.	no market

It is as yet difficult to ascertain whether the crash in London was due to the financial difficulties of one of the large houses dealing in raw commodities or to any action of the London Syndicate, or possibly to a combination of the two. It is possible that the distressed stocks will be taken out of the market privately, thus averting further weakness in the immediate future.

Gums in Dull Session

Market for varnish and other gums has been extremely dull for the past 4 or 5 weeks. What trading has been going on has been in small spot lots. The club over the market is, of course, the uncertainty surrounding the so-called gold clause decision by the U. S. Supreme Court that is being anxiously awaited. Buyers feel that by waiting they may be able to buy cheaper and the importer is

* Represents a "pegged price."

unwilling for the most part to obligate himself on long-term commitments until the situation clears. Such action may lead within the very near future, to scarcity of stocks in this country on many items. With the market in a sort of "status quo" state, price changes were very few and relatively unimportant.

Carnauba Declines

Carnauba quotations were slightly lower as the month closed (compared to Dec. 31). The obvious reason was, of course, arriving of substantial shipments from Brazil, relieving the scarcity of spot stocks. This temporary bullish factor having ended, the market assumed a more natural picture. Japan gained a ½c when spot stocks dropped to a low level and importers sounded out the replacement market for quotations. The similar situation in Candelilla caused a 1c advance in that item.

Shellac Research

Negotiations have recently been completed between Polytechnic Institute of Brooklyn and U. S. Shellac Importers' Association for an enlargement of cooperative research work on shellac which has been carried out by the Institute during the last 6½ years.

Project is part of an international research program which is sponsored by U. S. Shellac Importers' Association and Government of India through its Lac Cess Committee. Committee maintains Indian Lac Research Institute at Ranchi, India, and the London (England) Shellac Research Bureau. Results of investigations will be exchanged to avoid duplication.

Plans at "Poly" include an enlargement of the staff in this cooperative research and will consist of a research supervisor, an associate, assistant and two research fellows. In addition, cooperative agreements provide for deputation of Indian scientists to the staff at "Poly". Two fellowships ($800 per year), with remission of tuition fees, will be available to graduate students in doctorate work. A new laboratory at "Poly" is being constructed to accommodate the expanded work which will be under the supervision of Prof. Wm. Howlett Gardner. He will also act as the Institute's representative in cooperating with the technical representatives of the other interested parties.

Wax Importers Elect

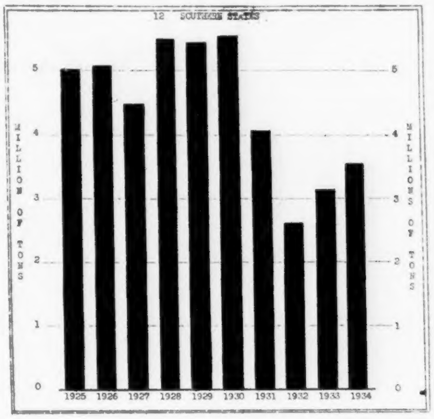
W. F. Leary, Wm. Allison & Co., wax importer, N. Y. City, is the new president of the N. Y. Wax Importers' Association. Other officers elected: Vice-President, E. Strahl, Strahl & Pitsch; secretary, Charles Christman, of Smith and Nichols; treasurer, R. Sievert, Frank B. Ross Co.

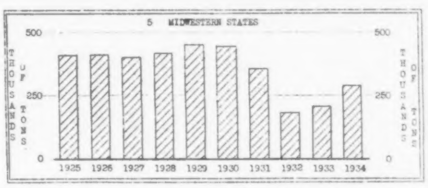
Jesse M. Aaron, vice-president and general sales manager of Standard Varnish, has resigned.

Fertilizers

¶ *Light Trading Features January Raw Materials Markets—'34 Tag Sales—*

Tax tag sales of fertilizer in 12 Southern States in December were only one-half of the sales in December of last year, when they were at an unusually high level.





—National Fertilizer Ass'n

Fertilizer sales compared

As compared with December, '32, there was a 15% increase. Tennessee and Oklahoma were the only States to report larger sales in December than in the same month of last year. Largest decline occurred in Florida, which also reported smaller sales than in December, '32. Sales in the Midwestern States were slightly less last month than a year ago, but were larger than 2 years ago. December sales are relatively small; in the past they have usually represented less than 3% of the year's sales in the South and an even smaller proportion in the Midwest.

The upward movement in tax tag sales which began in 1933 continued in 1934, as shown by the accompanying chart. Sales in the South last year were 13% above '33, and 36% above '32. The only 2 Southern States which showed smaller sales in 1934 than in 1933 were the Carolinas, but the declines in these 2 States were small and the sales in each case were much larger than in '32. The largest tonnage increase was shown by Georgia, with '34 sales 133,000 tons above '33, and 192,000 tons above '32.

Sales in the 5 reporting Midwestern States were 39% larger in '34 than in '33, and 60% larger than in '32. Every one of the 5 States showed larger sales last year than in either of the 2 years immediately preceding. Increase for the group was due largely to the gain shown by Indiana.

Important Price Changes

ADVANCED	Jan. 31	Dec. 31
Blood, dried, N. Y.	$3.25	$2.75
Chgo, high grade	3.65	3.25
Imported	3.10	3.05
Fish meal, Jap. sardine	34.50	34.00
Tankage, grd., N. Y.	2.75	2.65
Ungrd., N. Y.	2.40	2.50
Fert., grade, Chgo.	2.55	2.50
South American	3.15	3.00
DECLINED		
Dicalcium phosphate, precp., unit	$0.80	$0.88
Linseed cake	35.00	37.50
Meal	37.50	40.00

Poor Sales Volume Todate

January trading in fertilizer materials was disappointing as to volume, but with the mixing season almost at hand, a decided improvement is confidently anticipated in the first 2 weeks of February. Severe cold weather in the South as well as in the North may have been responsible for the temporary delay. Mixed-goods prices are reported to be about equal to last year and the general consensus of opinion among the mixers seems to be that a 10 to 15% increase in tonnages can conservatively be looked for. Some readjustment of opinions is likely to follow the extremely cold weather in Florida, where considerable damage is reported. This will, if true, hurt the sale of both mixed goods and top-dressing materials in that state. Elsewhere, the outlook remains bright.

The organic ammoniates continue to advance to new highs and more and more it is being suspected that the feedstuffs people and not the fertilizer mixers have carried blood, nitrogenous and tankage prices to the present levels. The continued gain in steel activity is being reflected in revised estimates of sulfate of ammonia production figures and there is considerably less talk about shortages and price advances than there was 3 months ago. Prices of other materials, potashes, phosphates, phosphate rock, etc., are unchanged and generally firm.

Fertilizer Personnel

J. Russel Porter, American Potash & Chemical's potash sales manager, opens an Atlanta sales office in the Walton Building.

H. J. Baker and Brother opens a Tampa office with Walter G. Grahn in charge.

J. W. Hansen, former United Fertilizer Co. manager, is now manager of Weaver Tankage, Norfolk.

Nash Dies

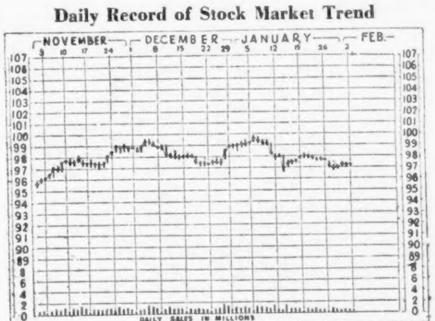
George H. Nash, for over 35 years general manager of V.-C.'s production department, on Jan. 3.

Chemical Finances

Chemical Stocks Make Comparatively Good Showing as the General List Declines in Light Trading—Street Awaits "Gold Clause" Decision—

The first month's trading of the new year resulted in a net loss in values. Thus the year did not start off very auspiciously in the Street. This is largely attributed to the uncertainty surrounding the possible ruling of the U. S. Supreme Court on the so-called gold clause. Traders generally attempted to curtail commitments, if possible, and a large number went out of the market entirely. Other adverse factors were present too, including the revival of labor troubles in several of the key industries, such as automotive, glass and textile, and although these did not reach the point of serious strikes, the whole labor picture is one of great uncertainty. Convening of Congress, with its flood of all sorts of radical schemes, and the apparent intention on the part of the Administration to ignore the demands of industry for a real balancing of the budget within a reasonable length of time, might be cited as some of the major unsettling influences. On the other hand, industrial activity surged ahead in January at an exceedingly rapid pace. The story of the month is, indeed, a mixed one, with favorable and non-favorable influences both striving for the upper hand.

Daily Record of Stock Market Trend



—N. Y. Herald-Tribune

The 1,185 issues on the N. Y. Stock Exchange were worth $32,991,035,003 on Feb. 1, against $33,933,882,614 on Jan. 1, a net loss of $942,847,611 in the 31 day period. On Feb. 1 the total value of chemical stocks was reported at $3,860,529,000, as compared with $3,895,016,123, a net loss of $34,487,123. The average value on Jan. 1 was $52.57 and $52.10 on Feb. 1. On Feb. 1, '34, the total value of chemical stocks on the N. Y. Stock Exchange was $3,838,756,912 with an average price of $53.69. The difference in the number of shares listed at the different periods makes a definite comparison impossible.

Chemical Stocks Act Well

In the final week of the month chemical shares exhibited special strength which was all the more noticeable because of the general weakness in the general list. Carbide was in heavy demand and closed at a new high for the move.

Fertilizer stocks were in excellent demand, the Street feeling that the coming season will again prove a profitable one to an industry which has had many lean years. American Agricultural Chemical on the 17th sold close to the high for the year and in fact close to the high for the past 10 years.

Buying was heavy in V.-C. issues, due quite likely to revival of the gossip about the early retirement of the 7% preferred of which there remains but 54,000 shares outstanding. There are accumulations amounting to $20 a share on this stock and nearly $40 on the 6% preferred.

V.-C. Dividend Ruling

Judge E. H. Wells in Hustings Court Part Two in Richmond, Va., hands down, Feb. 1, mandatory decree ordering Virginia Carolina Chemical to pay a dividend on its 7% prior preference stock amounting to about $380,000 covering accruals for one year. Dividend is to be paid out of '34 profits. Accruals on the stock as of Dec. 1, '34, amounted to $21 a share. After this payment the remaining accruals amounting to 14% will total about $760,000.

Suit was brought by 15 prior preferred stockholders, including 2 directors, in order to get a court ruling that would clarify the situation since the majority of directors took the position that the company could not pay preferred dividends as long as it had a profit and loss deficit. This deficit might be removed by retirement of the 90,499 shares of preferred now in the treasury, bought well below par. Control of the board is now held by representatives of the prior preferred stock who would lose voting control if this treasury preferred should be retired.

It is expected that following payment of the dividend just ordered by the court, directors will move to declare another dividend, and this in turn must also be referred to the courts for approval.

In the fiscal year ended June 30, '34, net profit of $492,377 was reported, equal to $9.06 a share on 54,372 shares of prior preferred now outstanding. Company had $11,944,010 net working capital, including about $7,200,000 cash and government bonds, so that its liquid position is sufficiently strong to pay off the remaining dividend accruals on the prior preferred stock.

Dividend Action

Freeport Texas Co. has declared a quarterly dividend of 25c on the common payable Mar. 1 to stock of record Feb. 15. Previously stock paid 50c quarterly. Directors state that preliminary estimate of earnings for '34 was $1.76 a share on the common after all charges and federal taxes. Earnings in the first half of the year were $1.04 a share. In view of the decline in sales and earnings, directors decided to reduce the dividend to con-

Dividends and Dates

Name	*Div.*	*Stock Record*	*Payable*
American Home Products	20c	Feb. 14	Mch. 1
Amer. Smelt & Rfg. 7% pf.	$1.75	Feb. 8	Mch. 1
Colgate-Palmolive-Peet	12½c	Feb. 8	Mch. 1
Colgate-Palmolive-Peet pf.	$1.50	Mch. 5	Apr. 1
Dow Chemical	50c	Feb. 1	Feb. 15
Dow Chemical pf.	$1.75	Feb. 1	Feb. 15
Freeport Texas	25c	Feb. 15	Mch. 1
Freeport Texas pf.	$1.50	Apr. 15	May 1
Hercules Powder pf.	$1.75	Feb. 4	Feb. 15
Monsanto Chemical	25c	Feb. 25	Mch. 15
Procter & Gamble	37½c	Jan. 25	Feb. 15
Sherwin-Williams	75c	Jan. 31	Feb. 15
Sherwin-Williams pf.	$1.50	Feb. 15	Mch. 1
Solvay Amer. Invest. pf.	$1.37½	Jan. 15	Feb. 15
St. Joseph Lead	10c	Mch. 8	Mch. 20
Vulcan Detinning pf.	$1.75	Apr. 10	Apr. 20
Westvaco Chlorine	10c	Feb. 15	Mch. 1
Will & Baumer	5c	Feb. 1	Feb. 15
Will & Baumer pf.	$2.00	Mch. 15	Apr. 1

ANNUAL MEETINGS

	Record Date	*Date of Meeting*
Colgate-Palmolive-Peet	Feb. 8	Mch. 8
Commercial Solvents	Feb. 20	Mch. 21
Devoe & Raynolds	Jan. 25	Feb. 13
Du Pont	Feb. 15	Mch. 11

Price Trend of Chemical Company Stocks

	Dec. 31 '34	Jan. 4	Jan. 12	Jan. 19	Jan. 26	Jan. 31	Net gain or loss this past month	Price on Jan. 31, 1934	1934-35 High	1934-35 Low
Air Reduction	112½	114¼	111¼	112¾	110½	111	—1½	102	115¾	91¾
Allied Chemical	137½	139	133¼	134	135½	136	—1½	152¾	160¾	115⅛
Columbian Carbon	74¾	.....	71	69½	69¾	69⅝	—5⅛	66⅝	77¼	58
Com. Solvents	21⅜	22⅝	21⅞	22⅛	21⅝	21⅛	— ¼	35⅝	36¾	15¾
du Pont	95⅝	98	94⅝	94⅛	93¾	94¾	—1⅞	99½	103⅞	80
Hercules	74½	76⅞	75⅜	77	74⅞	75¾	+1¼	69	81⅝	59
Mathieson	28⅝	29¼	29½	29½	28½	28¼	— ⅜	38	40¾	23½
Monsanto	59	60	57½	58	58⅛	56¾	—2¼	80	61⅝	39
Std. of N. J.	45¼	43⅛	42	41¾	41⅝	41⅜	—1⅞	47⅛	50⅛	39¼
Texas Gulf S.	34¼	35¼	33⅛	34½	33⅛	34¼	.....	39¾	43¼	30
Union Carbide	47⅛	47	45¾	44¾	45½	46	—1⅛	50⅞	50⅞	35⅞
U. S. I.	44½	44¼	40	39	39	37*	—7½	59¾	64¾	32

* Closing price Jan. 30.

serve cash resources, it is reported. Further progress in solving operating difficulties at Grande Ecaille was reported. Cuban American Manganese Corp., owned 86% by Freeport, had estimated net earnings of $32,000 last year, which were not consolidated with net of Freeport. Regular quarterly dividend of $1.50 on the preferred was declared, payable May 1 to stock of record April 15.

Columbian Carbon directors declare a quarterly dividend of $1 payable to holders of voting trust certificates. Previously 85c quarterly had been paid.

Company Reports

Net earnings of Hercules Powder for the year '34 were $3,038,406, representing, after payment of $738,752 preferred dividends, $3.94 a share on the company's outstanding no par common stock. Figures for the previous year, '33, showed net profits of $2,363,055 or $2.79 a common share.

During the year, regular dividends of 7% were paid on the company's outstanding preferred shares and dividends totalling $3.50, including an extra of 75c, were paid on the 583,167 outstanding common shares. In '33, dividends on the common aggregated $2.25 a share. Comparison of the annual statement with the previous quarterly statement shows net earnings of 71c a common share, after preferred dividend, during the 4th quarter of '34.

Current assets, as shown at the year end, of $17,587,144 stand at a 13.9 ratio to current liabilities. Cash and marketable securities amount to $6,994,333. While following an irregular course, company's business for the year as a whole averaged approximately 19% greater in volume than '33, and maintained a better relationship to pre-depression levels than did general business activity as measured by the Federal Reserve Board's index of industrial production. According to the annual statement of R. H. Dunham, president, gains in the several departments ranged from 8% to 28%.

Improvement in explosives business brought volume back approximately to '31 levels. Some increase in earnings was realized from naval stores sales; however, the earnings remained below an adequate return on the capital employed. Nitrocellulose business showed a healthy condition and the new applications being found for Hercules nitrocellulose give promise of continued growth in a broadening field. A good increase was registered in the chemical cotton business, while the paper chemical division was satisfactory.

Total export sales were larger in about the same proportion as domestic volume. A factor of stability in export sales is the trend toward wider markets, with less dependence for sales upon any one country.

Hercules continued its policy of aggressive research, spending approximately $700,000 for this purpose during the year. Efforts of the large staff engaged in research have resulted in marked improvement of processes and products, with a consequent broadening of markets.

Du Pont's Preliminary Report

Du Pont, in a preliminary statement for the year ended Dec. 31, reports earnings of $3.66 a share on the common, including dividends from General Motors, which amounted to $1.36 a share on du Pont stock. Earnings on the common in '33 were $3 a share, including General Motors dividends of $1.14 a share on du Pont stock. Report included company's equity in undivided profits or losses of controlled companies not consolidated with the parent corporation.

Atlas Nets $2.49 a Share

Report of Atlas Powder for year ended Dec. 31, shows net income of $1,124,722 after charges, depreciation and taxes, equivalent after dividend requirements on 6% preferred stock to $2.49 a share on 249,978 no-par shares of common, excluding 11,460 shares in treasury. This compares with $709,334, or 76c a share, on 241,218 common shares in '33. Sales for the year totaled $12,558,999 against $9,583,623.

A. A. C. Reports Loss

American Agricultural Chemical of Delaware and subsidiaries for 6 months ended Dec. 31 reports net loss after taxes, depreciation, depletion, reserve for self-insurance and other charges, $125,232, compared with $373,349 loss in 6 months ended Dec. 31, '33. Quarter ended Dec. 31: Net loss based on 6 and 9 months' reports, $22,776, compared with $102,456, loss in preceding quarter and $141,440 loss in December quarter of previous year.

Dow Financing

Dow Chemical arranged through Edward B. Smith & Co., as agents, for the private sale to institutions of $3,600,000 of one-to-five-year 2½% serial notes dated Jan. 1, 1935. Proceeds were used to redeem Feb. 1 the company's 6% debentures due in '40, now outstanding in the amount of $1,615,000, and for additions to plant and other purposes.

Ackerman a Director

At the annual meeting of the stockholders of the Royal Manufacturing Co. of Duquesne, manufacturing chemists, Pittsburgh, held recently, J. C. Ackerman was elected a member of the board of directors to fill a vacancy. Mr. Ackerman established a chemical brokerage office in Pittsburgh in '32, representing several nationally known manufacturers and importers, such as Innis, Speiden, Monsanto, Metals Refining, L. Sonneborn Sons, Warner Chemical and others. He was previously Pittsburgh division manager for Colgate.

Earnings Statements Summarized

Company:	Annual dividends	Net income 1934	Net income 1933	Common share earnings 1934	Common share earnings 1933	Surplus after dividends 1934	Surplus after dividends 1933
Am. Agricultural Chemical:							
**Dec. 31 quarter	$2.00	$ †22,776	$ †141,440	....	....	......	....
Six months, Dec. 31	2.00	†125,232	†373,349	....	....	......	....
Atlas Powder:							
Year, Dec. 31	2.00	1,124,722	709,334	$2.49	$ .76	......	....
Catalin Corp.:							
Year, Dec. 31	*f*....	‡260,154	‡97,838	....	....	......	....
Devoe & Raynolds:							
Year, Nov. 30	§1.00	459,513	656,336	*c*2.36	*c*3.78	$ 51,697	$ 510,300
General Paint:							
Year, Nov. 30	*f*....	200,889	51,062	*a*2.51	*a* .64	......	....
Hercules Powder:							
Year, Dec. 31	§3.00	3,038,406	2,363,055	*h*3.94	*h*2.79	257,701	312,305
Industrial Rayon:							
Year, Dec. 31	1.68	1,340,121	1,806,792	2.23	3.01	334,121	1,184,643
Pennsylvania Coal & Coke:							
Dec. 31 quarter	*f*....	‡37,465	†25,365	....	....	......	....
Procter & Gamble:							
Dec. 31 quarter	§1.50	3,458,561	2,723,677	*h* .50	*h* .39	*......	*.......
Six months, Dec. 31	§1.50	7,544,022	7,107,517	*h*1.11	*h*1.03	*......	*.......

** Indicated quarterly earnings as shown by comparison of company's reports for first quarter of fiscal year and the 6-month period; † Net loss; ‡ Profit before Federal taxes; § Plus extras; *f* No common dividend; *c* On combined Class A & B shares; *a* On Class A Stock; *h* On shares outstanding at the close of the respective periods.

Annual Financial Statements

Company:	Fixed chgs. times earn.	Pfd. div. times earned	Cash and mark. securities	Inventories	Ratio cur. assets to cur. liab.	Working capital
Atlas Powder:						
Year, Dec. 31, 1934	No fd. dbt.	2.23	*b*$5,412,553	$2,677,327	13.8	$ 9,396,020
Year, Dec. 31, 1933	No fd. dbt.	1.35	*b* 4,834,464	2,430,173	16.2	8,952,219
Devoe & Raynolds Corp.:						
Year, Nov. 30, 1934	No fd. dbt.	3.27	1,678,064	2,916,957	13.5	5,959,714
Year, Nov. 30, 1933	No fd. dbt.	4.49	1,572,904	2,730,323	12.7	5,871,887
Hercules Powder Co.:						
Year, Dec. 31, 1934	No fd. dbt.	4.11	6,994,333	7,255,129	13.9	16,321,205
Year, Dec. 31, 1933	No fd. dbt.	3.19	7,305,428	5,205,670	17.3	15,452,081

b Securities carried at cost.

Chemical Stocks and Bonds

Last (1935 January)	High (1935 January)	Low (1935 January)	1934 High	1934 Low	1933 High	1933 Low	Sales (Number of shares January 1935)	Stocks	Par $	Shares Listed	An. Rate*	Earnings $-per share-$ 1933	Earnings $-per share-$ 1932
NEW YORK STOCK EXCHANGE													
111	115¾	109½	113	91¾	112	47½	11,100	Air Reduction	No	841,288	$4.50	3.79	2.73
136	141	132¾	160¾	115⅛	152	70¾	12,900	Allied Chem. & Dye	No	2,214,099	6.00	5.50	3.62
124¾	125⅛	123¾	130	122⅛	125	115	1,000	7% cum. pf.	100	345,540	7.00	42.24	29.12
56¾	57½	47½	48	25¼	35	7¼	25,800	Amer. Agric. Chem.	100	315,701	2.00	p4.19	p—1.61
27⅞	33¼	27	62½	20¾	89⅞	13	21,100	Amer. Com. Alcohol	20	260,716	None	4.56	3.01
37½	39¼	36	39⅛	26¼	29¼	9¾	10,100	Archer-Dan-Midland	No	541,546	1.50	p3.82	p1.79
38½	43	37½	55½	35¼	39⅛	9	3,700	Atlas Powder Co.	No	234,235	2.00	.74	—2.06
109	109	106¾	106¾	83	83⅛	60	360	6% cum. pfd.	100	88,781	6.00	8.38	.47
30⅜	35⅜	28⅝	44⅞	17⅛	58⅞	4½	78,800	Celanese Corp. Amer.	No	987,800	None	3.32	— .95
16¾	18¼	16⅜	18⅛	9½	22⅜	7	36,100	Colgate-Palm.-Peet	No	1,985,812	.75	— .57	— .74
102¼	102½	101	102½	68½	88	49	3,500	6% pfd.	100	254,500	6.00	1.51	.21
69⅝	75	67	77¼	58	71½	23⅛	13,300	Columbian Carbon	No	538,154	3.40	2.17	1.83
21⅛	23⅞	20½	36¾	15¾	57¼	9	163,400	Commer. Solvents	No	2,635,371	.60	.88	.51
63	66⅞	62¼	84½	55½	90⅝	45⅜	19,000	Corn Products	25	2,530,000	3.00	3.87	2.77
150¾	151½	149	150½	135	145¾	117½	800	7% cum. pfd.	100	243,739	7.00	46.02	35.05
41	50⅜	40	55¼	29	33⅞	10	2,600	Devoe & Rayn. A	No	95,000	3.00	3.82	r—1.00
94¾	99⅜	92½	103⅞	80	95⅞	32⅛	59,200	DuPont de Nemours	20	10,871,997	3.15	2.93	1.81
127½	129	127¼	128½	115	117	97½	2,300	6% cum. deb.	100	1,092,699	6.00	35.58	24.00
112½	117¾	110½	116½	79	89¾	46	16,700	Eastman Kodak	No	2,250,921	4.00	4.76	2.52
145½	145½	141	147	120	130	110	810	6% cum. pfd.	100	61,657	6.00	180.34	98.27
21	26	20½	50⅜	21½	49⅜	16⅛	26,500	Freeport Texas	10	784,664	2.00	3.01	2.75
120	120⅛	120	160⅛	113½	160⅛	97	300	6% conv. pfd.	100	25,000	6.00	156.73	.....
24⅜	27¼	23¾	28⅜	15⅝	20	3¾	21,900	Glidden Co.	No	603,304	1.15	1.54	s— .06
107	107½	104⅞	107½	83	91½	48	790	Glidden, 6% pfd.	100	63,044	7.00	22.60	7.85
90	90	85	96⅞	74	85⅞	65	4,800	Hazel Atlas	25	434,409	5.00	6.22	4.68
75¾	77⅝	73⅝	81⅝	59	68⅝	15	5,900	Hercules Powder	No	582,679	3.00	2.79	.24
123¼	125	123½	125¾	111	110⅛	85	180	7% cum. pfd.	100	105,765	7.00	22.38	8.39
31⅝	33	30¼	32	19⅜	85	24	66,100	Industrial Rayon	No	600,000	1.68	3.01	.55
4¾	5	4	6⅛	2	5⅞	⅞	17,900	Intern. Agricul.	No	436,049	None	p .69	p—4.04
40	42¾	33½	37¼	15	23½	5	10,000	7% cum. pr. pfd.	100	100,000	None	p4.00	p—10.60
23¼	24⅜	22¼	29¼	21	23¼	6¾	113,200	Intern. Nickel	No	14,584,025	.60	.53	— .14
30⅝	31⅛	29	32	21	27¾	13¾	1,800	Intern. Salt	No	240,000	1.50	2.04	2.14
35	36	33	33⅛	15¾	22	7½	5,400	Kellogg (Spencer)	No	500,000	1.60	.98	v— .26
29⅛	32¾	28½	43⅞	22½	37⅜	4⅜	66,100	Libbey Owens Ford	No	2,559,042	1.20	1.64	— .13
27½	30⅞	27	35⅜	16⅛	50	10¼	19,700	Liquid Carbonic	No	342,406	1.25	v1.05	u—1.29
28¼	32	27⅝	40¾	23½	46⅝	14	33,100	Mathieson Alkali	No	650,436	1.50	1.70	.86
56¾	60½	55	61⅝	39	83	25	12,600	Monsanto Chem.	10	864,000	1.25	2.57	1.18
149	168½	145	170	135	140	43¼	1,300	National Lead	100	309,831	5.00	6.98	3.15
155	155	150	146½	122	128¼	101	400	7% cum. "A" pfd	100	243,676	7.00	18.35	13.55
124½	124½	121⅝	121½	100½	109⅛	75	590	6% cum. "B" pfd.	100	103,277	6.00	30.45	15.45
6½	8	6½	13	5½	11¾	1⅜	8,400	Newport Industries	1	519,347	None	.05	— .68
87	87½	83⅞	94	60	96¾	31½	10,900	Owens-Illinois Glass	25	1,200,000	4.00	4.86	1.62
45½	45⅞	42⅜	44⅜	33⅛	47½	19⅝	31,200	Procter & Gamble	No	6,410,000	1.70	1.52	q1.20
116¾	117	115	117	102½	110¾	97	670	5% pfd. (ser. 2-1-29)	100	171,569	5.00	61.95	52.16
5	5½	4⅜	6¾	3⅛	7¼	1⅜	11,600	Tenn. Corp.	5	857,896	None	— .11	— .89
34¼	35⅝	33	43¼	30	45¼	15¼	28,100	Texas Gulf Sulphur	No	2,540,000	2.00	2.93	2.33
46	48	44	50⅞	35⅞	51⅞	19¾	67,400	Union Carbide & Carbon	No	9,000,743	1.40	1.59	.98
47⅜	50	46	50⅜	35	37¾	10¼	12,300	United Carbon	No	370,127	2.40	1.39	— .05
36½	45½	36¼	64¾	32	94	13½	19,400	U. S. Indus. Alco.	No	391,033	None	3.56	.47
17⅞	21¾	17⅞	31¾	14	36¼	7⅝	22,400	Vanadium Corp.-Amer.	No	366,637	None	—2.40	—4.36
4⅛	4⅝	3⅝	5⅜	1⅞	7⅜	⅝	19,500	Virginia-Caro. Chem.	No	486,000	None	p—2.46	p—5.06
25½	27	20½	26	10	26½	3⅜	35,300	6% cum. part. pfd.	100	213,392	None	p .52	p—5.54
93½	93½	85	84	59¾	63½	35⅜	1,800	7% cum. prior pfd.	100	60,000	None	p9.06	p—12.71
20¾	23½	20¼	27¼	14⅞	20½	5	10,900	Westvaco Chlorine	No	284,962	.40	1.08	.79
NEW YORK CURB EXCHANGE													
17	17¾	16¼	22½	14⅝	16½	3¼	57,500	Amer. Cyanamid "B"	No	2,404,194	m .25	.99	.14
2⅞	3⅛	2⅞	4⅛	2⅜	4½	1	1,400	British Celanese Am. R.C.R.	243	....	None	.....	.....
106	107	102¾	105¼	81	110	27	5,325	Celanese, 7% cum. 1st pfd.	100	144,379	7.00	32.24	.60
103¾	103⅞	102	102	83	90	51	1,075	7% cum. prior pfd.	100	113,668	7.00	47.98	7.77
13	15	12¼	19	7	26⅞	2	2,100	Celluloid Corp.	15	194,952	None	—1.00	—3.79
11⅞	12	11⅞	14⅜	10½	11⅝	4⅛	600	Courtaulds' Ltd.	1 £	24,000,000	4⅛%	.....	.....
86	92	84	91	67½	78	30	8,100	Dow Chemical	No	945,000	2.00	†3.60	†1.33
9⅝	10¼	8¾	10¾	4	8	½	5,400	Duval Texas Sulphur	No	500,000	None	z .08	z— .17
39	42	37	40¾	19	19	8	2,200	Heyden Chem. Corp.	10	147,600	1.35	2.68	1.23
55¼	58	53½	57½	39	39⅞	13	11,100	Pittsburgh Plate Glass	25	2,141,305	1.40	1.87	— .03
86	90¼	84	90½	47¼	47	12⅞	9,100	Sherwin Williams	25	635,583	3.00	y3.54	— .44
108½	108½	108	109¾	100	99	80	230	6% pfd. AA. cum.	100	155,521	6.00	y20.78	4.52
CLEVELAND STOCK EXCHANGE													
86	92	84	91	67½	78	30	600	Dow Chemical	No	945,000	2.00	†3.60	†1.33
PHILADELPHIA STOCK EXCHANGE													
78½	78½	75	75	50¼	57	25¼	200	Pennsylvania Salt	50	150,000	3.00	2.17	2.42

Last (1935 January)	High (1935 January)	Low (1935 January)	1934 High	1934 Low	1933 High	1933 Low	Sales (January 1935)	Bonds	Date Due	Int. %	Int. Period	Outstanding $
NEW YORK STOCK EXCHANGE												
106¼	107½	105⅛	106¾	83⅞	89	64	448	Amer. I. G. Chem. Conv. 5½'s	1949	5½	M. N.	29,929,000
11	11	8¾	17¾	5	14⅛	2⅛	171	Anglo Chilean s. f. deb. 7's	1945	7	M. N.	12,700,000
85	87½	77½	88	61½	74⅞	37	128	By-Products Coke Corp. 1st 5½'s "A"	1945	5½	M. N.	4,932,000
97	97	91⅛	92	62	65	38½	226	Int. Agric. Corp. 1st Coll. tr. stpd. to 1942	1942	5	M. N.	5,994,100
9⅝	10⅜	8¼	19½	5⅛	14⅞	2½	359	Lautaro Nitrate conv. 6's	1954	6	J. J.	31,357,000
92½	93	89¼	98½	89⅞	99⅛	87	176	Montecatini Min & Agric. det. 7's with war.	1937	7	J. J.	7,075,045
38	...	...	74½	34½	62	33¾	6	Ruhr Chem. 6's	1948	6	A. O.	3,156,000
94	95	91½	90	65½	76	50	31	Tenn. Corp. deb. 6's "B"	1944	6	M. S.	3,007,900
90½	92½	88½	89½	62	81	34¾	379	Vanadium Corp. conv. 5's	1941	5	A. O.	4,261,000
NEW YORK CURB EXCHANGE												
102⅛	104	102⅛	104⅝	101⅜	103½	101	35	Westvaco Chlorine Prod. 5½'s	1937	5½	M. S.	1,393,000

† Years ended 5-31-33 & 34; *m* Last paid, no regular rate; *p* Years ended 6-30-33 and 6-30-34; *r* Year ended 11-30-32; *s* Years ended 10-31-32 & 33; *u* Year ended 9-30-32; *v* Years ended 9-2-32 & 33; *x* Years ended 5-31-32 & 33; *y* Year ended 8-31-33; *z* Years ended 8-31-33, and 8-31-34; * Including extras.

Industrial Trends

¶ *Business Activity Gains Despite Uncertainties over the Gold Clause Ruling and Labor Unrest*

Business activity in January spurted ahead with remarkable vigor. Retail trade continued to hold at very satisfactory levels, and, what was far more encouraging, the heavy industries were generally more active. Real winter weather is responsible for moving out seasonal winter merchandise in large volume and stocks are close to the vanishing point. Wholesalers report heavy committments for spring goods. Authoritative sources placed the improvement in retail trade at 12 to 20% above January of last year.

Steel at 52.5 Per Cent.

Steel activity is heartening and steady increases in the rate of operations were noted in each of the 4 weeks. The sizable figure of 52.5% was reached as the month closed. January automotive production exceeded the early estimate of 280,000 units by about 20,000. Electrical consumption figures are running between 7 and 11% ahead of last year, but carloadings statistics were not so impressive in the first 3 weeks of the month. However, carloadings for the week ending Feb. 2 totalled about 590,000 which would be a gain of 6% over the figure for the week ending Jan. 26, and a gain of more than 4½% over the corresponding week of '34. Heavy bituminous loadings were largely responsible for the sudden improvement.

Textiles Irregular

Textile industry presented an irregular picture in January, cotton production jumping ahead in the first week at a dizzy pace, but then slumping in each of the following weekly periods. Rayon producers are active: silk and wool operations were nothing to "brag about." Tanning and shoe production schedules have been advanced from the low of the holiday period. *The American Glass Review* reports the glass industry as "much improved over a month ago and also over the corresponding period of last year." Paint and lacquer manufacturers are increasing operations seasonally at an encouraging rate. The rubber industry, particularly the tire division, reports schedules accelerated beyond earlier estimates.

Gold Clause Decision

It is difficult to estimate to what extent business was held back because of the uncertainties created by the expected decision of the U. S. Supreme Court on the so-called gold clause. Certainly, trading on the various stock and commodity markets was adversely affected. Operations were curtailed by the withdrawal of large numbers from their positions in the various markets, many apparently desiring to liquidate holdings. In addition, the ever-present, but occasionally dormant labor question, again is raising its head as the Administration prepares to rewrite the NIRA for Congressional approval. Business leaders are genuinely worried over some of the radical proposals now being voiced in Washington, but it is felt in many quarters that the more radical ones will not get out of the "committee graveyard."

January Chemical Shipments

January chemical shipments reflect the better volume in the principal consuming industries. The first 3 weeks were exceptionally good, but some slight falling off was reported near the close of the month.

Commodity Prices Higher

Commodity prices generally were higher, all of the leading wholesale commodity price indices, including the Dept. of Labor Index, that of the National Fertilizer Association and Fisher's, all showing sizable advances. Cottonseed continued to advance, and, in fact, the gains made in the oils and fats generally were close to the spectacular. Naval stores were higher and trading somewhat improved over the November-December buyers' strike period.

All of the accepted indices of business activity are in agreement on the January improvement. That of the *N. Y. Times* shows a rise from 83.3 on Dec. 29 to 86.8 on Jan. 26.

Statistics of Business

	December 1934	December 1933	November 1934	November 1933	October 1934	October 1933
Auto production	183,187	80,565	78,415	60,683	132,488	134,683
Bldg. contracts*‡	$212,813	$278,030	$111,740	$162,340	$135,524	$145,367
Failures, Dun & Bradstreet	963	1,132	923	......	1,091	1,206
Merchandise imports‡	$132,252	$133,518	$150,519	$128,541	$129,629	$150,867
Merchandise exports‡	$170,676	$192,638	$194,901	$184,256	$206,352	$193,069
Newsprint Production						
Canada, tons	239,544	175,304	240,869	193,718	235,021	191,452
U. S., tons	79,777	80,895	74,933	87,567	80,572	82,052
Newfoundland, tons	......	......	28,713	......	25,321	......
Total, tons	......	......	346,271	......	342,867	......
Plate Glass prod., sq. ft.	......	......	6,587,366	4,169,442	7,512,052	5,793,693
Shoe production, pairs	......	......	26,000,000	23,695,000	......	......
Steel ingots	1,941,000	1,798,000	1,579,356	1,487,968	1,461,932	2,084,892
Steel activity, % of capacity	35.26	33.10	1,579,356	1,487,968	1,461,932	2,084,892
U. S. consumption crude rubber, tons	......	......	......	......	31,347	31,543
Tire shipments	......	......	3,191,102	......	2,912,000	2,030,000
Tire production	......	......	3,340,859	......	3,182,000	2,743,000
Tire inventory	......	......	8,778,989	......	8,444,000	6,769,000
Factory payrolls, totals†	63.2	54.5	59.5	55.5	60.7	59.4
Factory employment†	78.1	74.4	76.7	75.9	78.6	79.6
Dept. of Labor Indices						
Chemical price index†	78.2	79.2	80.9	79.2	81.1	78.6
Chemical employment†*a*	......	107.6	108.6	108.4	109.2	109.1
Chemical payrolls†*a*	90.0	86.0	90.7	84.6	91.6	85.5
Chemicals and Related Products						
Exports‡	......	......	......	......	$4,955	......
Imports‡	......	......	......	......	$7,793	......
Stocks, mfd. goods†	......	121	......	111	121	117
Stocks, raw materials†	......	126	......	127	120	121

Week Ending	Carloadings 1935	Carloadings 1934	Carloadings % of Normal	Electrical Output 1935	Electrical Output 1934	Electrical Output % of Change	Jour. of Com. Price Index	National Fertilizer Association Indices: Metals	Fats & Oils	Chem. & Drugs	Mixed Fert.	Fert. Mat.	All Groups	Labor Dept. Chem. & Drug Price Index	% Steel Activity	Fisher's Index Purch. Power	N. Y. Times Index Bus. Act.
Dec. 29	425,120	454,765	61.47	1,650,467	1,539,002	+7.2	78.2	81.9	71.6	94.0	76.9	65.7	76.3	78.3	39.2	127.1	83.3
Jan. 5	498,073	500,813	64.59	1,668,731	1,563,678	+6.7	79.6	81.9	73.7	94.0	76.9	66.0	76.8	79.1	43.4	125.9	87.1
Jan. 12	553,675	557,266	70.83	1,772,609	1,646,271	+7.7	79.4	81.9	75.9	94.0	76.9	66.1	77.5	79.6	47.5	123.9	86.2
Jan. 19	562,955	561,902	71.98	1,778,273	1,624,846	+9.4	79.3	81.9	76.0	94.0	76.5	65.7	77.0	79.8	49.5	123.3	86.9
Jan. 26	555,768	563,100	70.67	1,781,666	1,610,542	+10.6	79.9	81.9	80.0	94.0	76.5	65.8	77.6	80.0	52.5	122.6	86.8

* 37 states, F. W. Dodge Corp.; ‡ 000 omitted; † Dept. of Labor, 3 year average, 1923-1925 = 100.0; *a* Includes all allied products but not petroleum refining.

Prices Current

Heavy Chemicals, Coal-tar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizers and Insecticide Materials, Petroleum Solvents and Chemicals, Naval Stores, Fats and Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Import chemicals are so designated. Resale stocks when a market factor are quoted in addition to maker's prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f.o.b., or ex-dock. Materials sold f.o.b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1934 Average $1.31. - Jan. 1934 $1.37 - Jan. 1935 $1.25

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Acetaldehyde, drs c-l, wks lb.	...	.14	...	.14	.14	.16½
Acetaldol, 95%, 50 gal drs wks lb.	.21	.25	.21	.25	.21	.31
Acetamide, tech, lcl, kegs lb.	.38	.43	.38	.43	.40	1.35
Acetanalid, tech, 150 lb bbls lb.	.24	.26	.24	.26	.24	.26
Acetic Anhydride, 100 lb cbys lb.	.21	.25	.21	.25	.21	.25
Acetin, tech, drs lb.	.22	.24	.22	.24	.22	.32
Acetone, tks, delv lb.	.11	.12	.11	.12	.10	.12
drs, c-l, delv lb.	...	.12	...	.12	.12	.12
Acetyl chloride, 100 lb cbys lb.	.55	.68	.55	.68	.55	.68
ACIDS						
Abietic, kgs, bbls lb.	.06¾	.07	.06¾	.07	.06	.07
Acetic, 28%, 400 lb bbls, c-l, wks 100 lbs.	...	2.40	...	2.40	2.40	2.91
glacial, bbls, c-l, wks 100 lbs.	...	8.25	...	8.25	8.25	10.02
glacial, USP, bbls, c-l, wks 100 lbs.	...	12.25	...	12.25	...	12.25
Adipic, kgs, bbls lb.	...	.72	...	.72	.72	.72
Anthranilic, refd, bbls lb.	.85	.95	.85	.95	.85	.95
tech, bbls lb.	...	.75	...	.75	.65	.75
Battery, cbys, delv 100 lbs.	1.60	2.25	1.60	2.25	1.60	2.25
Benzoic, tech, 100 lb kgs lb.	.40	.45	.40	.45	.40	.45
USP, 100 lb kgs lb.	.54	.59	.54	.59	...	...
Boric, tech, gran, 80 tons, bgs, delv ton *a*	...	80.00	...	80.00	80.00	80.00
ton *a*	...	90.00	...	90.00	90.00	90.00
ton *a*	...	85.00	...	85.00	85.00	85.00
ton *a*	...	95.00	...	95.00	95.00	95.00
Broenner's, bbls lb.	1.20	1.25	1.20	1.25	1.20	1.25
Butyric, 95%, cbys lb.	.53	.60	.53	.60	.53	.85
edible, c-l, wks, cbys lb.	1.20	1.30	1.20	1.30	1.20	1.30
synthetic, c-l, drs lb.	...	.22	...	.22	.22	.22
wks lb.	...	.23	...	.23	.23	.23
tks, wks lb.	...	.21	...	.21	.21	.21
Camphoric, drs lb.	...	5.25	...	5.25	5.25	5.25
Chicago, bbls. lb.	...	2.10	...	2.10	2.10	2.10
Chlorosulfonic, 1500 lb drs, wks lb.	.04½	.05½	.04½	.05½	.04½	.05½
Chromic, 99¾%, drs, delv lb.	.13¾	.15¾	.13¾	.15¾	.13½	.15¾
Citric, USP, crys, 230 lb bbls lb. *b*	.28	.29	.28	.29	.28	.30
anhyd, gran, drs lb. *b*	...	.31	...	.31	.31	.31
Cleve's, 250 lb bbls lb.	.52	.54	.52	.54	.52	.54
Cresylic, 99%, straw, HB, drs, wks, frt equal gal.	.46	.47	.46	.47	.46	.47
99%, straw, LB, drs, wks, frt equal gal.	.64	.65	.64	.65	.64	.65
resin grade, drs, wks, frt equal gal.	.54	.55	.54	.55	.54	.55
Crotonic, drs lb.	.90	1.00	.90	1.00	.90	1.00
Formic, tech, 140 lb drs lb.	.11	.13	.11	.13	.11	.13
Fuming, see Sulfuric (Oleum)						
Fuoric, tech, 90%, 100 lb. drs. lb.	...	.35	...	.35	...	.35
Gallic, tech, bbls lb.	.65	.68	.65	.68	.60	.70
USP, bbls lb.	.70	.80	.70	.80	.74	.80
Gamma, 225 lb bbls, wks lb.	.77	.79	.77	.79	.77	.79
H, 225 lb. bbls, wks lb.	.50	.55	.50	.55	.50	.70
Hydriodic, USP, 10% sol. cbys lb.	.50	.51	.50	.51	.50	.51
Hydrobromic, 48% com 155 lb cbys, wks lb.	.45	.48	.45	.48	.45	.48
Hydrochloric, see muriatic.						
Hydrocyanic, cyl, wks lb.	.80	1.30	.80	1.30	.80	1.30
Hydrofluoric, 30%, 400 lb bbls, wks lb.	.07	.07½	.07	.07½	.07	.07½
Hydrofluosilicic, 35%, 400 bbls, wks lb.	.11	.12	.11	.12	.11	.12
Lactic, 22%, dark, 500 lb bbls lb.	.04½	.05	.04½	.05	.04	.05
22%, light refd, bbls lb.	.06½	.07	.06½	.07	.06½	.07
44%, light, 500 lb bbls lb.	.11½	.12	.11½	.12	.11½	.12
44%, dark, 500 lb bbls lb.	.09½	.10	.09½	.10	.09	.10
USP X, 95%, cbys lb.	.45	.50	.45	.50	...	...
USP VIII, 75%, cbys lb.	.43	.48	.43	.48	...	...
Laurent's, 250 lb bbls lb.	.36	.37	.36	.37	.36	.37
Linoleic, bbls lb.	.16	.16	.16	.16	.16	.16
Maleic, powd, kgs lb.	.29	.32	.29	.32	.25	.32
Malic, powd, kgs lb.	.45	.60	.45	.60	.45	.60
Metanillic, 250 lb bbls lb.	.60	.65	.60	.65	.60	.65
Mixed, tks, wks N unit	.06½	.07¼	.06½	.07¼	.06½	.07¼
S unit	.008	.009	.008	.009	.008	.01
Monochloracetic, tech, bbls lb.	.16	.18	.16	.18	.16	.18
Monosulfonic, bbls lb.	1.50	1.60	1.50	1.60	1.50	1.60

a Powdered boric acid $5 a ton higher in each case; USP $15 higher; *b* Powdered citric is ½c higher; kegs are in each case ½c higher than bbls.

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Muriatic, 18°, 120 lb cbys, c-l, wks 100 lb.	...	1.35	...	1.35	...	1.35
tks, wks 100 lb.	...	1.00	...	1.00	...	1.00
20°, cbys, c-l, wks 100 lb.	...	1.45	...	1.45	...	1.45
tks, wks 100 lb.	...	1.20	...	1.20	...	1.20
22°, c-l, cbys, wks 100 lb.	...	1.95	...	1.95	...	1.95
tks, wks 100 lb.	...	1.60	...	1.60	...	1.60
CP, cbys lb.	.06½	.07⅛	.06½	.07⅛	.06½	.07⅛
N & W, 250 lb bbls lb.	.85	.87	.85	.87	.85	.87
Naphthenic, drs lb.	.12	.13	.12	.13	.10	.13
Naphthionic, tech, 250 lb bbls lb.	.60	.65	.60	.65	.60	.65
Nitric, 36°, 135 lb cbys. c-l, wks 100 lb. *c*	...	5.00	...	5.00	...	5.00
38°, c-l, cbys, wks 100 lb. *c*	...	5.50	...	5.50	...	5.50
40°, cbys, c-l, wks 100 lb. *c*	...	6.00	...	6.00	...	6.00
42°, c-l, cbys, wks 100 lb. *c*	...	6.50	...	6.50	...	6.50
CP, cbys, delv lb.	.11½	.12½	.11½	.12½	.11½	.12½
Oxalic, 300 lb bbls, wks, or N. Y. lb.	.11½	.12½	.11½	.12½	.11½	.12⅛
Phosphoric, 50%, USP, cbys lb.	.14	.14	.14	.14	.14	.14
50%, acid, c-l, drs, wks lb.	.06	.08	.06	.08	.05	.08
75%, acid, c-l, drs, wks lb.	.09	.10½	.09	.10½	.07	.10½
Picramic, 300 lb bbls, wks lb.	.65	.70	.65	.70	.65	.70
Picric, kgs, wks lb.	.30	.40	.30	.40	.30	.50
Pyrogallic, crys, kgs, wks lb.	1.55	1.65	1.55	1.65	1.40	1.65
Salicylic, tech, 125 lb bbls, wks lb.	...	.40	...	.40	.33	.40
Sebacic, tech, drs, wks lb.	...	.58	...	.58	...	.58
Sulfanilic, 250 lb bbls, wks lb.	.18	.19	.18	.19	.18	.19
Sulfuric, 60°, tks, wks ton	...	11.00	...	11.00	...	11.00
c-l, cbys, wks 100 lb.	...	1.10	...	1.10	...	1.10
66°, tks, wks ton	...	15.50	...	15.50	15.00	15.50
c-l, cbys, wks 100 lb.	...	1.35	...	1.35	...	1.35
CP, cbys, wks lb.	.06½	.07½	.06½	.07½	.06½	.07½
Fuming (Oleum) 20% tks, wks ton	...	18.50	...	18.50	...	18.50
Tannic, tech, 300 lb bbls lb.	.23	.40	.23	.40	.23	.40
Tartaric, USP, gran powd, 300 lb bbls lb.	...	.24	.24	.25	.25	.26
Tobias, 250 lb bbls lb.	.75	.80	.75	.80	.75	.80
Trichloroacetic bottles lb.	2.45	2.75	2.45	2.75	2.00	2.75
kgs lb.	...	1.75	...	1.75	...	1.75
Tungstic, tech, bbls lb.	1.50	1.60	1.50	1.60	1.35	1.70
Vanadic, drs, wks lb.	1.10	1.20	1.10	1.20	1.10	1.20
Albumen, light flake, 225 lb bbls lb.	.45	.53	.45	.53	.35	.53
dark, bbls lb.	.12	.17	.12	.17	.10	.17
egg, edible lb.	.85	.87	.85	.87	.82	.92
vegetable, edible lb.	.65	.70	.65	.70	.65	.70
ALCOHOLS						
Alcohol, Amyl, tks, delv lb.	...	.143	...	.143	...	.143
c-l, drs, delv lb.	...	.15	...	.15	.15	.157
Amyl, secondary, tks, delv lb.	...	.108	...	.108	...	.108
c-l, drs, delv lb.	...	.118	...	.118	...	.118
Amyl, tertiary, taks, delv lb.	...	.052	...	.052	...	.052
c-l, drs, delv lb.	...	.062	...	.062	...	.062
Benzyl, bottles lb.	.75	1.10	.75	1.10	.75	1.10
Butyl, normal, tks, delv lb. *d*	...	.12	...	.12	.09½	.12
c-l, drs, delv lb. *d*	...	.13	...	.13	.10½	.13
Butyl, secondary, tks, delv lb. *d*	...	.096	...	.096	.076	.096
c-l, drs, delv lb. *d*	...	.106	...	.106	.086	1.06
Capryl, drs, tech, wks lb.	...	.85	...	.85	.85	.85
Cinnamic, bottles lb.	3.25	3.65	3.25	3.65	3.25	3.65
Denatured, No. 5, c-l, drs, wks gal. *e*	...	.34	...	.34	.30	.34
Western schedule, c-l, wks gal. *e*	...	.38	...	.38	...	...
Denatured, No. 1, tks, wks gal. *e*	...	.29½	...	.29½	.29½	.304
c-l, drs, wks gal. *e*	...	.34½	...	.34½	...	...
Western schedule, tks, wks gal. *e*	...	.32½	...	.32½	...	...
c-l, drs, wks gal. *e*	...	.37½	...	.37½	...	...
Diacetone, tech, tks, delv lb. *f*	...	.16	...	.16	...	...
c-l, drs, delv lb. *f*	...	.17	...	.17	...	.17

c Yellow grades 25c per 100 lbs. less in each case; *d* Spot prices are 1c higher; *e* Anhydrous is 5c higher in each case; *f* Pure prices are 1c higher in each case.

ABBREVIATIONS—Anhydrous, anhyd; bags, bgs; barrels, bbls; carboys, cbys; carlots, c-l; less-than-carlots, lcl; drums, drs; kegs, kgs; powdered, powd; refined, ref'd; tanks, tks; works, f.o.b., wks.

Prices Current

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Alcohols (continued)						
Ethyl, 190 proof, molasses,						
tks ....gal. g	...	4.08½	...	4.08½	...	4.08½
c-l, drs ....gal. g	...	4.13½	...	4.13½	...	4.13½
c-l, bbls ....gal. g	...	4.15½	...	4.15½	4.12½	4.24½
absolute, drs ......gal. g	4.55½	6.10	4.55½	6.10	...	...
Furfuryl, tech, 500 lb,						
drs ....lb.	...	.35	...	.35	.35	.40
Hexyl, tks, delv ....lb.	...	.11½	...	.11½	...	.11½
c-l, drs, delv ....lb.	...	.12½	...	.12½	...	.12½
Isoamyl, prim, cans, wks lb.	4.00	4.50	4.00	4.50	4.00	4.50
Isobutyl, refd, lcl, drs ..lb.	...	.12	.12	.60	.60	.75
c-l, drs ....lb.	...	.11½	...	...	...	...
tks ....lb.	...	.10½	...	...	...	...
Isopropyl, refd, c-l, drs..lb.	...	.55	...	.55	.45	.55
Propyl, norm, 50 gal drs gal.	...	.75	...	.75	...	.75
Aldehyde ammonia, 100 gal						
drs ....lb.	.80	.82	.80	.82	.80	.82
Alphanaphthol, crude, 300 lb						
bbls ....lb.	.60	.65	.60	.65	.65	.70
Alphanaphthylamine, 350 lb						
bbls ....lb.	.32	.34	.32	.34	.32	.34
Alum, ammonia, lump, c-l,						
bbls, wks ....100 lb.	...	3.00	...	3.00	2.90	3.00
25 bbls or more,						
wks ....100 lb.	...	3.15	...	3.15	...	3.15
less than 25 bbls,						
wks ....100 lb.	...	3.25	...	3.25	...	3.25
Granular, c-l, bbls, wks 100 lb.	...	2.75	...	2.75	...	2.75
25 bbls or more,						
wks ....100 lb.	...	2.90	...	2.90	...	2.90
Powd, c-l, bbls, wks 100 lb.	...	3.15	...	3.15	...	3.15
25 bbls, or more,						
wks ....100 lb.	...	3.30	...	3.30	...	3.30
Chrome, bbls ......100 lb.	7.00	7.25	7.00	7.25	6.50	7.25
Potash, lump, c-1, bbls,						
wks ....100 lb.	...	3.25	...	3.25	...	3.25
25 bbls or more,						
wks ....100 lb.	...	3.40	...	3.40	...	3.40
Granular, c-l, bbls, wks 100 lb.	...	3.40	...	3.00	...	3.00
25 bbls or more, bbls,						
wks ....100 lb.	...	3.00	...	3.15	...	3.15
Powd, c-l, bbls, wks 100 lb.	...	3.40	...	3.40	...	3.40
25 bbls or more,						
wks ....100 lb.	...	3.55	...	3.55	...	3.55
Soda, bbls, wks .....100 lb.	4.00	4.15	4.00	4.15	3.50	4.15
Aluminum metal, c-1						
NY ....100 lb.	20.00	23.30	20.00	23.30	20.00	24.30
Acetate, CP, 20%, bbls lb.	.09	.10	.09	.10	.09	.10
Chloride anhyd, 99%,						
wks ....lb.	.07	.12	.07	.12	.07	.12
93%, wks ....lb.	.05	.08	.05	.08	.04	.08
Crystals, c-l, drs, wks ...lb.	.06½	.07	.06½	.07	.06½	.01
Solution, drs, wks ......lb.	.03	.03½	.03	.03½	.03	.03½
Hydrate, 96%, light, 90 lb.						
bbls, delv ....lb.	.13	.15	.13	.15	.13	.16½
heavy, bbls, wks .....lb.	.04	.04½	.04	.04½	.04	.04½
Oleate, drs ....lb.	...	.15¾	...	.15¾	...	.15¾
Palmitate, bbls ....lb.	.20	.21	.20	.21	.19	.21
Resinate, pp., bbls .....lb.	...	.15	...	.15	.12½	.15
Stearate, 100 lb bbls....lb.	.17	.19	.17	.19	.17	.18
Sulfate, com, c-l, bgs,						
wks ....100 lb.	...	1.35	...	1.35	1.35	1.35
c-l, bbls, wks .....100 lb.	...	1.55	...	1.55	1.55	1.55
Sulfate, iron-free, c-l, bgs,						
wks ....100 lb.	...	1.90	...	1.90	1.90	1.90
c-l, bbls, wks .....100 lb.	...	2.05	...	2.05	2.05	2.05
Aminoazobenzene, 110 lb						
kgs ....lb.	...	1.15	...	1.15	...	1.15
Ammonia anhyd com, tks..lb.	.04½	.05½	.04½	.05½	.04½	.05½
Ammonia anhyd, 100 lb cyl lb.	.15¼	.21½	.15¼	.21½	.15¼	.21½
26°, 800 lb drs, delv ....lb.	.02½	.03	.02½	.03	.02½	.03
Aqua 26° tks NH ....cont.	...	.05	...	.05	...	.05
tk wagon ....lb.	...	.024	...	.024	...	...
Ammonium Acetate, kgs ..lb.	.26	.33	.26	.33	.26	.33
Bicarbonate, bbls, f.o.b.						
plant ....100 lb.	5.15	5.71	5.15	5.71	5.15	5.71
Bifluoride, 300 lb bbls...lb.	.15	.17	.15	.17	.15	.17
carbonate, tech, 500 lb						
bbls ....lb.	.08	.12	.08	.12	.08	.12
Chloride, White, 100 lb						
bbls, wks ....100 lb	4.45	4.90	4.45	4.90	4.45	5.25
Gray, 250 lb bbls wks...lb.	5.00	5.75	5.00	5.75	5.00	5.75
Lump, 500 lbs cks spot lb.	.10½	.11	.10½	.11	.10	.11
Lactate, 500 lb bbls ....lb.	.15	.16	.15	.16	.15	.16
Linoleate ....lb.	.11	.12	.11	.12	.11	.12
Nitrate, tech, cks ....lb.	.04	.05	.04	.05	.03¾	.05
Oleate, drs ....lb.	...	.10	...	.10	...	.10
Oxalate, neut, cryst, powd,						
bbls ....lb.	.26	.27	.26	.27	.26	.27
pure, cryst, bbls, kgs..lb.	.27	.28	.27	.28	.27	.28
Serchlorate, kgs ....lb.	...	.16	...	.16	.16	.16
Persulfate, 112 lb kgs ..lb.	.22½	.25	.22½	.25	.20	.25
Phosphate, dibasic tech,						
powd, 325 lb bbls ....lb.	.08	.10	.08	.10	.08	.11½
Sulfate, dom, f.o.b., bulk.ton	...	24.00	...	24.00	22.00	25.00
200 lb bgs ....ton	...	25.80	...	25.80	...	25.80
100 lb bgs ....lb.	...	26.50	...	26.50	...	26.50
Sulfocyanide, kgs ......lb.	...	.50	...	.50	...	.50
Amyl Acetate (from pentane)						
tks delv ....lb.	...	.13½	...	.13½	...	.13½
tech, drs, delv ....lb.	.142	.149	.142	.149	.142	.149
secondary, tks, delv ..lb.	...	.108	...	.108	.09	.108
c-l, drs, delv ....lb.	.118	.123	.118	.123	...	.123
Alcohol, see Alcohol, Amyl, also Fusel Oil.						

g Grain alcohol 20c a gal. higher in each case.

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Amyl Chloride, norm drs, wks lb.	.56	.68	.56	.68	.56	.68
Chloride, mixed, drs,						
wks ....lb.	.07	.077	.07	.077	.07	12.2
tks, wks ....lb.	...	.06	...	.06	.06	10.5
Lactate, drs, wks ......lb.	...	.50	...	.50	...	.50
Mercaptan, drs, wks ....lb.	...	1.10	...	1.10	...	1.10
Stearate, drs, wks ......lb.	...	.31	...	.31	...	.31
Amylene, drs, wks ....lb.	.102	.11	.102	.11	.10	.11
tks, wks ....lb.	...	.09	...	.09	...	.09
Aniline Oil, 960 lb drs and tks lb.	.15	.17½	.15	.17½	.15	.17½
Annatto fine ....lb.	.34	.37	.34	.37	.34	.37
Anthracene, 80% ....lb.	...	.75	...	.75	...	.75
40% ....lb.	...	.18	...	.18	...	.18
Anthraqumone, sublimed, 125						
lb bbls ....lb.	.45	.50	.45	.50	.45	.50
Antimony, metal slabs, ton						
lots ....lb.	...	.14½	...	.14½	.07	.14½
Needle, powd, bbls .....lb.	.07¾	.08¼	.07¾	.08¼	.07	.09
Butter of, see Chloride.						
Chloride, soln cbys .....lb.	.13	.17	.13	.17	.13	.17
Oxide, 500 lb bbls .....lb.	.10¼	.11	10¼	.11	.08	.11
Salt, 63% to 65%, tins..lb.	.22	.24	.22	.24	.22	.24
Sulfuret, golden, bbls ..lb.	.19	.23	.19	.23	.16	.23
Vermilion, bbls ....lb.	.35	.42	.35	.42	.35	.42
Archil, conc, 600 lb bbls ..lb.	.21	.27	.21	.27	.21	.27
Double, 600 lb bbls .....lb.	.18	.20	.18	.20	.18	.20
Triple, 600 lb bbls .....lb.	.18	.20	.18	.20	.18	.20
Arglos, 80%, casks ......lb.	.15	.16	.15	.16	.15	.16
Crude, 30%, casks .....lb.	.07	.08	.07	.08	.07	.09
Aroclors, wks ....lb.	.18	.30	.18	.30	.18	.30
Arrowroot, bbl ....lb.	.08¾	.09¾	.08¾	.09¾	.08¾	.09¼
Arsenic, Red, 224 lb cs kgs lb.	...	.15¾	...	.15¾	.14	.15¾
White, 112 lb kgs ......lb.	.03½	.04½	.03½	.04½	.03½	.05
Metal ....lb.	.40	.42	.40	.42	.40	.45
Asbestine, c-l wks ....ton	13.00	15.00	13.00	15.00	13.00	15.00
Barium Carbonate precip,						
200 lb bgs, wks ......ton	56.50	61.00	56.50	61.00	56.50	61.00
Nat (witnerite) 90% gr,						
c-l, wks, bgs ....ton	42.00	45.00	42.00	45.00	42.00	45.00
Chlorate, 112 lb kgs NY lb.	.14	.16	.14	.16	.14	.16
Chloride, 600 lb bbl wks ton	72.00	74.00	72.00	74.00	72.00	74.00
Dioxide, 88%, 690 lb drs lb.	.11	.12	.11	.12	.11	.13
Hydrate, 500 lb bbls ....lb.	.05½	.06	.05½	.06	.04¾	.06
Nitrate, 700 lb cks .....lb.	...	.08¼	...	.08¼	...	.08¼
Barytes, floated, 350 lb bbls						
wks ....ton	23.00	30.50	23.00	30.50	23.00	30.50
Bauxite, bulk, mines .....ton	7.00	10.00	7.00	10.00	5.00	10.00
Benzaldehyde, tech, 945 lb						
drs, wks ....lb.	.60	.62	.60	.62	.60	.65
Benzene (Benzol), 90%, Ind,						
8000 gal tks, frt allowed						
....................gal.	...	.15	...	.15	.15	.20½
90% c-l, drs ....gal.	...	.24	...	.24	...	.24
Ind Pure, tks, frt allowed						
....................gal.	...	.15	...	.15	.15	.20½
Benzidine Base, dry, 250 lb						
bbls ....lb.	.67	.69	.67	.69	.67	.69
Benzoyl Chloride, 500 lb drs lb.	.40	.45	.40	.45	.40	.45
Benzyl Chloride, tech, drs..lb.	.30	.40	.30	.40	.30	.40
Beta-Naphthol, 250 lb bbl,						
wks ....lb.	...	.24	...	.24	...	.24
Naphthylamine, sublimed,						
200 lb bbls ....lb.	1.25	1.35	1.25	1.35	1.25	1.35
Tech, 200 lb bbls ....lb.	.53	.55	.53	.55	.53	.58
Bismuth metal	1.10	1.20	1.10	1.20	1.10	1.30
Chloride, boxes ....lb.	3.20	3.25	3.20	3.25	...	...
Hydroxide, boxes ......lb.	3.15	3.20	3.15	3.20	...	...
Oxychloride, boxes .....lb.	2.95	3.00	2.95	3.00	...	...
Subbenzoate, boxes .....lb.	3.25	3.30	3.25	3.30	...	...
Subcarbonate, kgs ......lb.	1.55	1.65	1.55	1.70	...	...
Trioxide, powd, boxes ..lb.	3.45	3.50	3.45	3.50	...	...
Subnitrate	1.40	1.45	1.40	1.45	1.40	1.60
Blackstrap, cane (see Molasses, Blackstrap).						
Blanc Fixe, 400 lb bbls,						
wks ....ton h	42.50	70.00	42.50	70.00	42.50	70.00
Bleaching Powder, 800 lb drs						
c-l wks contract...100 lb.	...	1.90	...	1.90	...	1.90
lcl, drs, wks ....lb.	2.15	3.50	2.15	3.50	2.00	3.50
Blood, dried, f.o.b., NY..unit	...	3.25	2.75	3.25	2.40	3.25
Chicago, high grade ...unit	...	3.65	3.25	3.75	2.00	3.10
Imported shipt ....unit	...	3.10	3.05	3.10	2.75	3.20
Blues, Bronze Chinese Milori						
Prussian Soluble .....lb.	.36½	.38	.36½	.38	.35½	.38
Bone, 4½ + 50% raw,						
Chicago ....ton	19.00	20.00	19.00	20.00	19.00	25.00
Bone Ash, 100 lb kgs .....lb.	.06	.07	.06	.07	.06	.07
Black, 200 lb bbls ......lb.	.05½	.08¼	.05½	.08¼	.05½	.08¼
Meal, 3% & 50%, imp..ton	23.50	24.00	23.50	24.00	16.00	24.00
Domestic, bgs, Chicago..ton	16.50	17.00	16.00	18.00	...	...
Borax, tech, gran, 80 ton lots,						
sacks, delv ....ton i	...	36.00	...	36.00	36.00	36.00
bbls, delv ....ton i	...	46.00	...	46.00	46.00	46.00
c-l, sacks, delv ....ton i	...	40.00	...	40.00	40.00	40.00
c-l, bbls, delv ....ton i	...	50.00	...	50.00	50.00	50.00
Tech, powd, 80 ton lots,						
sacks ....ton i	...	41.00	...	41.00	41.00	41.00
bbls, delv ....ton i	...	51.00	...	51.00	51.00	51.00
c-l, sacks, delv ....ton i	...	45.00	...	45.00	45.00	45.00
c-l, bbls, delv ....ton i	...	55.00	...	55.00	55.00	55.00
Bordeaux Mixture, jobbers,						
East, c-l, tins, drs, cases lb.	.08	.16	.08	.16	...	.16
Jobbers, West, c-l ......lb.	.08	.10	.08	.10	...	.10
Dealers, East, c-l ......lb.	.08½	.16½	.08½	.16½	...	.16½
Dealers, West, c-l ......lb.	.09	.11	.09	.11	...	.11

h Lowest price is for pulp, highest for high grade precipitated; i Crystals $6 per ton higher; USP, $15 higher in each case.

Prices

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Bromine, cases ....lb.	.30	.43	.30	.43	.30	.43
Bronze, Al, pwd, 300 lb drs lb.	.80	1.50	.80	1.50	.80	1.50
Gold, blk ....lb.	.40	.55	.40	.55	.40	.55
Butanes, com 16-32° group 3 tks ....lb.	...	.04	...	.04	.02¾	.04
Butyl, Acetate, norm drs, frt allowed ....lb.	.13	.13½	.13	.13½	.11	.14
tks, frt allowed ....lb.	.12	.13	.12	.13	.10	.13
Secondary tks, frt allowed lb.	...	.096	...	.096	.08	.096
drs, frt, allowed ......lb.	.106	.111	.106	.111	...	.111
Aldehyde, 50 gal drs wks lbs.	.19	.21	.19	.21	.19	.36
Secondary, drs ....lb.	.60	.75	.60	.75	.60	.75
Carbinol, norm drs, wks lb.	.60	.75	.60	.75	.60	.75
Furoate, tech, 50 gal drs lb.	...	.65	...	.65	.60	.65
Lactate drs ....lb.	.22½	.23½	.22½	.23½	.22½	.29
Propionate, drs ....lb.	.18	.18½	.18	.18½	.17	.22
tks, delv ....lb.	...	.17	...	.17	...	.17
Stearate, 50 gal drs ....lb.	...	.26	...	.26	.25	.26
Tartrate, drs ....lb.	.55	.60	.55	.60	.55	.60
Cadmium, Sulfide, boxes...lb.	.75	.85	.75	.85	.65	.85
Calcium, Acetate, 150 lb bgs c-l, delv ....100 lb.	...	2.00	...	2.00	2.00	3.00
Arsenate, jobbers, East of Rocky Mts, drs ......lb.	.06	.06½	.06	.06½	...	...
dealers, drs ....lb.	.06¼	.07½	.06¼	.07½	...	...
South, jobbers, drs .....lb.	.06	.06½	.06	.06½	...	...
dealers, drs ....lb.	.06½	.06¾	.06¼	.06¾	...	...
Carbide, drs ....lb.	.05	.06	.05	.06	.05	.06
Carbonate, tech, 100 lb bgs c-l ....lb.	1.00	1.00	1.00	1.00	1.00	1.00
Chloride, flake, 375 lb drs c-l wks ....ton	...	19.50	...	19.50	...	19.50
Solid, 650 lb drs c-l f.o.b. wks ....ton	...	17.50	...	17.50	...	17.50
Ferrocyanide, 350 lb bbls wks ....lb.	...	.17	...	.17	...	.17
Furoate, tech, 100 lb drs lb.	...	.25	...	.25	.25	.30
Gluconate, tech, 125 lb bbls ....lb.	...	.28	...	.28	.25	.28
Nitrate, 100 lb bgs ....ton	...	26.50	...	26.50	...	26.50
Palmitate, bbls ....lb.	.20	.21	.20	.21	.19	.20
Peroxide, 100 lb drs ....lb.	...	1.25	...	1.25	...	1.25
Phosphate, tech, 450 lb bbls ....lb.	.07½	.08	.07½	.08	.07½	.08
Resinate, precip, bbls ...lb.	.13	.14	.13	.14	.13	.14
Stearate, 100 lb bbls....lb.	.17	.19	.17	.19	.17	.19
Camphor, slabs ....lb.	.50	.52	.50	.52	.51	.59
Powder ....lb.	.50	.52	.50	.52	.51	.59
Camwood, Bk, ground bbls lb.	.16	.18	.16	.18	.16	.18
Carbon, Decolorizing, drs c-l ....lb.	.08	.15	.08	.15	.08	.15
Black, c-l, bgs, delv, price varying with zone ....lb.	.0445	.0535	.0445	.0535	.0445	.0535
lcl, bgs, delv, all zones lb.	...	.07	...	.07	.06½	.07
cartons, delv ....lb.	...	.07¾	...	.07¾	...	.07¾
cases, delv ....lb.	...	.08¼	...	.08¼	...	.08¼
Bisulfide, 500 lb drs....lb.	.05¼	.08	.05¼	.08	.05½	.08
Dioxide, Liq 20-25 lb cyl lb.	.06	.08	.06	.08	.06	.08
Tetrachloride, 1400 lb drs, delv ....lb.	.05¼	.06	.05¼	.06	.05¼	.06
Casein, Standard, Dom grd lb.	.10½	.13	.09½	.13	.09¼	.13
80-100 mesh, c-l, bgs ....lb.	.11¼	.13½	.10	.13½	.10	.14
Castor Pomace, 5½ NH_3, cl, bgs, wks ....ton	...	18.50	...	18.50	...	...
Imported, ship, bgs ....ton	19.50	20.00	19.50	20.00	...	...
Celluloid, Scraps, ivory cs lb.	.17	.18	.17	.18	.13	.18
Transparent, cs ....lb.	...	.20	...	.20	.16	.20
Cellulose, Acetate, 50 lb kgs ....lb.	.55	.60	.55	.60	.55	.90
Chalk, dropped, 175 lb bbls lb.	.03	.03¾	.03	.03¾	.03	.03¾
Precip, heavy, 560 lb cks lb.	.03	.04	.03	.04	.03	.04
Light, 250 lb cks ....lb.	.03	.04	.03	.04	.03	.04
Charcoal, Hardwood, lump, blk, wks ....bu.	...	.15	...	.15	.12	.18
Willow, powd, 100 lb bbl wks ....lb.	.06	.06¼	.06	.06¼	.06	.06¼
bgs, delv ....ton	25.00	30.00	25.00	30.00	...	...
Chestnut, clarified bbls wks lb.	...	.01⅞	...	.01⅞	.01⅝	.01⅞
25% tks wks ....lb.	...	.01½	...	.01½	.01¼	.01½
Pwd, 60%, 100 lb bgs, wks ....lb.	...	.04⅞	...	.04⅞	...	.04⅞
China Clay, c-l, blk mines ton	...	7.00	...	7.00	7.00	9.00
Powdered, bbls ....lb.	.01	.02	.01	.02	.01	.02
Pulverized, bbls wks ...ton	10.00	12.00	10.00	12.00	10.00	12.00
Imported, lump, blk ...ton	15.00	25.00	15.00	25.00	15.00	25.00
Chlorine, cyls, lcl, wks contract ....lb.	.07½	.08½	.07½	.08½	.07	.08½
cyls, c-l, contract ...lb. *j*	...	.05½	...	.05½	...	.05½
Liq tk wks contract..100 lb.	...	2.00	...	2.00	1.85	2.00
Multi c-l cyls wks cont..lb.	2.15	2.40	2.15	2.40	2.00	2.40
Chloroacetophenone, tins, wks ....lb.	...	2.00	...	2.00	...	...
Chlorobenzene, Mono, 100 lb drs, lc-l, wks ....lb.	.06	.07½	.06	.07½	.06	.07½
Chloroform, tech, 1000 lb drs ....lb.	.20	.21	.20	.21	.20	.21
USP, 25 lb tins ....lb.	.30	.31	.30	.31	.30	.35
Chloropicrin; comml cyls..lb.	.85	.90	.85	.90	.85	1.25
Chrome, Green, CP ......lb.	.20	.30	.20	.30	.20	.30
Commercial ....lb.	.06¼	.10	.06¼	.10	.06¼	.10
Yellow ....lb.	.15	.16	.15	.16	.15	.16
Chromium, Acetate, 8% Chrome bbls ....lb.	.05	.05¾	.05	.05¾	.05	.05¾
20° soln, 400 lb bbls .. lb.	...	.05½	...	.05½	...	.05½
Fluoride, powd, 400 lb bbl ....lb.	.27	.28	.27	.28	.27	.28

j A delivered price.

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Coal tar, bbls ....bbl.	7.25	9.00	7.25	9.00	7.25	9.00
Cobalt Acetate, bbls ......lb.	...	.60	...	.60	.60	.80
Carbonate tech, bbls ....lb.	1.35	1.40	1.35	1.40	1.34	1.40
Hydrate, bbls ....lb.	1.66	1.76	1.66	1.76	1.66	1.76
Linoleate, paste, bbls ...lb.	...	.30	...	.30	.30	.40
Resinate, fused, bbls ...lb.	...	.12½	...	.12½	...	.12½
Precipitated, bbls ......lb.	...	.32	...	.32	.32	.42
Cobalt Oxide, black, bgs ..lb.	1.25	1.35	1.25	1.35	1.25	1.35
Cochineal, gray or bk bgs lb.	.34	.39	.34	.39	.33	.42
Teneriffe silver, bgs ....lb.	.35	.40	.35	.40	.34	.43
Copper, metal, electrol 100 lb.	...	9.00	...	9.00	7.87½	9.00
Carbonate, 400 lb bbls ..lb.	...	.08¼	...	.08¼	...	.08¼
52-54% bbls ....lb.	.14½	.16¼	.14½	.16¼	.15½	.16
Chloride, 250 lb bbls ...lb.	.17	.18	.17	.18	.17	.18
Cyanide, 100 lb drs ....lb.	.37	.38	.37	.38	.37	.40
Oleate, precip, bbls .....lb.	...	.20	...	.20	...	.20
Oxide, red, 100 lb bbls ..lb.	.15	.17	.15	.17	.12½	.17
black bbls, wks ......lb.	.16	.16½	.16	.16½	...	...
Resinate, precip, bbls ...lb.	.18	.19	.18	.19	.18	.19
Stearate, precip, bbls ...lb.	.35	.40	.35	.40	.35	.40
Sub-acetate verdigris, 400 lb bbls ....lb.	.18	.19	.18	.19	.18	.19
Sulfate, bbls c-l wks 100 lb.	...	3.85	...	3.85	3.75	3.85
Copperas, crys and sugar bulk c-l, wks, bgs ....ton	12.00	13.00	12.00	13.00	12.00	14.50
Corn Syrup, 42 deg, bbls ....100 lb.	...	3.49	...	3.49	3.04	3.59
43 deg, bbls ......100 lb.	...	3.54	...	3.54	3.09	3.64
Cotton, Soluble, wet, 100 lb bbls ....lb.	.40	.42	.40	.42	.40	.42
Cream Tartar, USP, powd & gran, 300 lb bbls .....lb.	...	.17¼	...	.17¼	.17½	.19½
Creosote, USP, 42 lb cbys lb.	.45	.47	.45	.47	.45	.47
Oil, Grade 1, tks ......gal.	.11½	.12½	.11½	.12½	.10	.12½
Grade 2 ....gal.	.10½	.11½	.10½	.11½	.10½	.12
Cresol, USP, drs ....lb.	.11	.11½	.11	.11½	.11	.11½
Crotonaldehyde, 98% 50 gal drs ....lb.	.32	.36	.32	.36	.26	.36
Cudbear, English ....lb.	.19	.25	.19	.25	.19	.25
Philippine, 100 lb bale ..lb.	.03½	.04¾	.03½	.04¾	.03½	.04¾
Cyanamid, bags c-l frt allowed Ammonia unit	...	1.07½	...	1.07½	...	1.07½
Dextrin, corn, 140 lb bgs f.o.b., Chicago ...100 lb.	...	4.05	...	4.05	3.50	4.20
British Gum, bgs ...100 lb.	...	4.20	...	4.20	3.75	4.60
White, 140 lb bgs ..100 lb.	4.00	4.10	4.00	4.10	3.47	4.20
Potato, Yellow, 220 lb bgs ....lb.	.07¾	.08¾	.07¾	.08¾	.07¾	.08¾
White, 220 lb bgs, lcl ...lb.	.08	.09	.08	.09	.08	.09
Tapioca, 200 bgs, lcl ....lb.	...	.08¾	...	.08¾	.06¾	.08¾
Diamylamine, drs, wks ....lb.	...	1.00	...	1.00	...	1.00
Diamylene, drs, wks ......lb.	.095	.102	.095	.102	.09	.102
tks, wks ....lb.	...	.08½	...	.08½	...	.08½
Diamylether, wks, drs ....lb.	.085	.092	.085	.092	.09	.77
tks, wks ....lb.	...	.075	...	.075	...	...
Diamylphthalate, drs wks gal.	...	.20½	...	.20½	...	.20½
Diamyl Sulfide, drs, wks lb.	...	1.10	...	1.10	...	1.10
Dianisidine, bbls ....lb.	2.25	2.45	2.25	2.45	2.35	2.45
Dibutylphthalate, drs, wks lb.	.22	.23	.22	.23	.20½	.21
Dibutyltartrate, 50 gal drs lb.	.29½	.31½	.29½	.31½	.29½	.31½
Dichlorethylene, drs .....gal.	.29	...	.29	...	.29	...
Dichloroethylether, 50 gal drs, wks ....lb.	.16	.17	.16	.17	.16	.21
tks, wks ....lb.	...	.15	...	.15	...	.15
Dichloromethane, drs, wks lb.	...	.23	.15	.23	...	.15
Dichloropentanes, drs, wks lb.	.032	.040	.032	.040	.0278	.040
tks, wks ....lb.	...	.02½	...	.02½	...	.02½
Diethylamine, 400 lb drs ..lb.	2.75	3.00	2.75	3.00	2.75	3.00
Diethyl Carbinol, drs .....lb.	.60	.75	.60	.75	.60	.75
Diethylcarbonate, com drs lb.	.31⅜	.35	.31⅜	.35	.31⅜	.35
90% grade, drs ......lb.	...	.25	...	.25	...	.25
Diethylaniline, 850 lb drs..lb.	.52	.55	.52	.55	.52	.55
Diethylorthotoluidin, drs ..lb.	.64	.67	.64	.67	.64	.67
Diethyl phthalate, 1000 lb drs ....lb.	.26	.27	.26	.27	.26	.27
Diethylsulfate, tech, 50 gal drs ....lb.	...	...	...	...	...	...
Diethyleneglycol, drs .....lb.	.14	.16	.14	.16	.14	.16
Mono ethyl ethers, drs..lb.	.15	.17	.15	.17	.15	.17
tks, wks ....lb.	...	.15	...	.15	...	...
Mono butyl ether, drs ..lb.	...	.26	...	.26	...	.26
Diethylene oxide, 50 gal drs ....lb.	.26	.27	.26	.27	.26	.27
Diglycol Oleate, bbls .....lb.	.16	.24	.16	.24	.16	.18
Dimethylamine, 400 lb drs, pure 25 & 40% sol 100% basis ....lb.	...	.95	...	.95	.95	1.20
Dimethylaniline, 340 lb drs lb.	.29	.30	.29	.30	.29	.30
Dimethyl Ethyl Carbinol, drs ....lb.	.60	.75	.60	.75	.60	.75
Dimethyl phthalate, drs ...lb.	.21½	.24½	.21½	.24½	.24	.24½
Dimethysulfate, 100 lb drs lb.	.45	.50	.45	.50	.45	.50
Dinitrobenzene, 400 lb bbls ....lb. *k*	.17	.19½	.17	.19½	.17	.19½
Dintrochlorobenzene, 400 lb bbls ....lb.	.14	.15½	.14	.15½	.14	.15½
Dinitronaphthalene, 350 lb bbls ....lb.	.34	.37	.34	.37	.34	.37
Dinitrophenol, 350 lb bbls lb.	.23	.24	.23	.24	.23	.24
Dinitrotoluene, 300 lb bbls lb.	.15½	.16½	.15½	.16½	.15½	.16½
Diphenyl ....lb.	.15	.25	.15	.25	.15	.25
Diphenylamine ....lb.	.31	.32	.31	.32	.31	.34
Diphenylguanidine, 100 lb bbl ....lb.	.36	.37	.36	.37	.36	.37

k Higher price is for purified material.

Prices

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Dip Oil, see Tar Acid Oil.						
Divi Divi pods, bgs shipmt. ton	36.00	40.00	36.00	40.00	35.00	40.00
Extract ... lb.	.05	.05½	.05	.05½	.05	.05½
Egg Yolk, 200 lb. cases ... lb.	.47	.49	.46	.49	.40	.54
Epsom Salt, tech, 300 lb bbls c-l NY ... 100 lb.	2.20	2.25	2.20	2.25	2.20	2.25
USP, c-l, bbls ... 100 lb.	...	2.25	...	2.25	2.25	2.25
Ether, USP anaesthesia 55 lb drs ... lb.	.22	.23	.22	.23	.22	.24
(Conc) ... lb.	.09	.10	.09	.10	.09	.10
Ether, Isopropyl 50 gal drs lb.	.07	.08	.07	.08	.07	.08
tks, frt allowed ... lb.	...	.06	...	.06	...	...
Nitrous, conc, bottles ... lb.	.75	.77	.75	.77	.75	.77
Synthetic, wks, drs ... lb.	.08	.09	.08	.09	.08	.09
Ethyl Acetate, 85% Ester tks ... lb.	.07½	.08	.07½	.08	.07½	.08
drs ... lb.	.08½	.09	.08½	.09	.08½	.09
Anhydrous, tks ... lb.	...	.08½	...	.08½	.08½	.10
drs ... lb.	.09½	.10	.09½	.10	.09½	.10¼
Acetoacetate, 50 gal drs lb.	.65	.68	.65	.68	.65	.68
Benzylaniline, 300 lb drs lb.	.88	.90	.88	.90	.88	.90
Bromide, tech, drs ... lb.	.50	.55	.50	.55	.50	.55
Chloride, 200 lb drs ... lb.	.22	.24	.22	.24	.22	.24
Chlorocarbonate cbys ... lb.	...	.30	...	.30	...	.30
Crotonate, drs ... lb.	1.00	1.25	1.00	1.25	1.00	1.25
Ether, Absolute, 50 gal drs ... lb.	.50	.52	.50	.52	.50	.52
Lactate, drs, wks ... lb.	.25	.29	.25	.29	.25	.33
Methyl Ketone, 50 gal drs, frt allowed ... lb.	.08½	.09	.08½	.09	.08½	.09
tks, frt allowed ... lb.	...	.07½	...	.07½	...	...
Oxalate, drs, wks ... lb.	.37½	.55	.37½	.55	.37½	.55
Oxybutyrate, 50 gal drs wks ... lb.	.30	.30½	.30	.30½	.30	.30½
Ethylene Dibromide, 60 lb drs ... lb.	.65	.70	.65	.70	.65	.70
Chlorhydrin, 40%, 10 gal cbys chloro, cont ... lb.	.75	.85	.75	.85	.75	.85
Dichloride, 50 gal drs ... lb.	.0545	.0994	.0545	.0994	.0545	.09
Glycol, 50 gal drs, wks lb.	.26	.28	.26	.28	.26	.28
Mono Butyl Ether, drs, wks ...	.20	.21	.20	.21	.20	.21
tks, wks ... lb.	...	.19	...	.19	.19	.19
Mono Ethyl Ether, drs, wks ...	.16	.17	.16	.17	.15	.17
tks, wks ... lb	...	.15	...	.15	.15	.15
Mono Ethyl Ether Acetate, drs, wks ...	.17½	.18½	.17½	.18½	.16½	.18½
tks, wks ... lb.	...	.16½	...	.16½	.16½	.16½
Mono, Methyl Ether, drs ... lb.	.21	.23	.21	.23	.21	.23
Stearate ...	.18	.18	.18	.18	.18	.18
Oxide, cyl ... lb.	...	.75	...	.75	...	.75
Ethylidenaniline ... lb.	.45	.47½	.45	.47½	.45	.47½
Feldspar, blk pottery ... ton	...	14.50	...	14.50	...	14.50
Powd, blk, wks ... ton	14.00	14.50	14.00	14.50	13.50	14.50
Ferric Chloride, tech, crys, 475 lb bbls ... lb.	.05	.07½	.05	.07½	.05	.07½
sol, cbys ... lb.	.06¼	.06½	.06¼	.06½	...	...
Fish Scrap, dried, unground, wks ... unit *l*	...	2.50	...	2.50	2.25	2.60
Acid, Bulk, 6 & 3%, delv Norfolk & Baltimore basis ... unit *m*	...	2.00	...	2.00	2.00	2.50
Fluorspar, 98%, bgs ...	28.00	35.50	28.00	35.50	28.00	35.50
Formaldehyde, USP, 400 lb bbls, wks ... lb.	.06	.07	.06	.07	.06	.07
Fossil Flour ... lb.	.02½	.04	.02½	.04	.02½	.04
Fullers Earth, blk, mines ... ton	6.50	15.00	6.50	15.00	6.50	15.00
Imp powd, c-l, bgs ... ton	23.00	30.00	23.00	30.00	23.00	30.00
Furfural (tech) drs, wks lb.	.10	.15	.10	.15	.10	.15
Furfuramide (tech) 100 lb drs ... lb.	...	.30	...	.30	...	.30
Furfuryl Acetate, 1 lb tins lb.	...	5.00	...	5.00	...	5.00
Fusel Oil, 10% impurities lb.	.16	.18	.16	.18	.16	.18
Fustic, chips ... lb.	.04	.05	.04	.05	.04	.05
Crystals, 100 lb boxes ... lb.	.20	.23	.20	.23	.20	.23
Liquid 50°, 600 lb bbls ... lb.	.08½	.12	.08½	.12	.08½	.12
Solid, 50 lb boxes ... lb.	.16	.18	.16	.18	.16	.18
Sticks ... ton	25.00	26.00	25.00	26.00	25.00	26.00
G Salt paste, 360 lb bbls ... lb.	.42	.43	.42	.43	.42	.43
Gall Extract ... lb.	.18	.20	.18	.20	.18	.20
Gambier, com 200 lb bgs ... lb.	...	.08	...	.08	.04	.08
Singapore cubes, 150 lb bgs ... 100 lb.	.08⅛	.09⅛	.08⅛	.09⅛	.05	.09⅛
Gelatin, tech, 100 lb cs ... lb.	.50	.55	.50	.55	.45	.55
Glauber's Salt, tech, c-l wks ... 100 lb.	1.10	1.30	1.10	1.30	1.10	1.30
Anhydrous, see Sodium Sulfate.						
Glucose (grape sugar) dry 70-80° bgs, c-l, NY ... 100 lb.	3.24	3.34	3.24	3.34	3.24	3.34
Tanner's Special, 100 lb. bgs ... 100 lb.	...	2.33	...	2.33	...	2.33
Glue, bone, com grades, c-l bgs ... lb.	...	.08	...	.08	.07	.12½
Better grades, c-l, bgs lb.	.09	.09½	.09	.09½	.09½	.16
Casein, kgs ... lb.	.18	.22	.18	.22	.18	.22
Hide, high grd, c-l, bgs ... lb.	.23	.28	.23	.28	.23	.28
Med grd, c-l, bgs ... lb.	.19	.23	.19	.23	.19	.23
Low grd, c-l, bgs ... lb.	.13½	.19	.13½	.19	.13½	.19
Glycerin, CP, 550 lb drs ... lb.	.14	.14½	.14	.14½	.11	.14½
Dynamite, 100 lb drs ... lb.	.13¾	.14¼	.13¾	.14¼	.10	.14¼
Saponification, drs ... lb.	.10	.10½	.10	.10½	.06¾	.10½
Soap Lye, drs ... lb.	.09	.09¼	.09	.09¼	.06¼	.09⅛

l + 10; *m* + 50.

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Glyceryl Phthalate ....lb.	...	.28	...	.28	...	.28
Glyceryl Stearate, bbls....lb.	...	.18	...	.18	...	.18
Glycol Phthallate ....lb.	...	.29	.28	.29	...	.28
Glycol Stearate ....lb.	...	.23	.18	.23	.18	.20
Graphite,						
Crystalline, 500 lb bbls ....lb.	.04	.05	.04	.05	.04	.05
Flake, 500 lb. bbls .....lb.	.08	.16	.08	.16	.08	.16
Amorphous, bbls ....lb.	.03	.04	.03	.04	.03	.04
GUMS						
Gum Aloes, Barbadoes ....lb.	.87	.90	.87	.90	.85	.90
Animi (Zanzibar) bean & pea,						
250 lb cases ....lb.	.35	.40	.35	.40	.35	.40
Glassy, 250 lb cases ....lb.	.50	.55	.50	.55	.50	.55
Arabic, amber sorts ......lb.	.09½	.10½	.09½	.10½	.07¾	.10⅝
White sorts, No. 1, bgs ....lb.	.21	.22	.21	.22	...	...
No. 2, bgs ....lb.	.20	.21	.20	.21	...	...
Powd, bbls ....lb.	.13½	.14½	.13½	.14½	...	...
Asphaltum, Barbadoes (Manjak) 200 lb bgs, f.o.b.,						
NY ....lb.	.02½	.10½	.02½	.10½	.02½	.10½
Egyptian, 200 lb cases,						
f.o.b. NY ....lb.	.12	.15	.12	.15	.12	.15
California, f.o.b. NY, drs ....ton	29.00	55.00	29.00	55.00	...	...
Benzoin Sumatra, USP, 120						
lb cases ....lb.	.20	.21	.20	.21	.18½	.23
Copal Congo, 112 lb bgs,						
clean, opaque ....lb.	.24½	.24⅝	.24⅛	.24⅝	.24⅛	.28
Dark, amber ....lb.	.08¾	.09¼	.08¾	.09¼	.08⅝	.10½
Light, amber ....lb.	.14⅝	.14⅞	.14⅝	.14⅞	.14⅜	.19
Copal, East India 180 lb bgs						
Macassar pale bold ....lb.	.09⅞	.10⅜	.09⅞	.10⅜	.09⅞	.10½
Chips ....lb.	.05½	.06	.05½	.06	...	...
Nubs ....lb.	.08½	.09	.08½	.09	...	...
Dust ....lb.	.03¾	.04¼	.03¾	.04¼	...	...
Singapore						
Bold ....lb.	.16½	.17	.16½	.17	.16	.17
Chips ....lb.	.04⅝	.05⅛	.04⅝	.05⅛	...	...
Nubs ....lb.	.10½	.11	.10½	.11	...	...
Dust ....lb.	.03¾	.04¼	.03¾	.04¼	...	...
Copal Manilla, 180-190 lb						
baskets, Loba A .....lb.	.11¾	.12¼	.11¾	.12¼	.11⅜	.14½
Loba B ....lb.	.10¼	.10¾	.10¼	.10¾	.10¼	.13½
Loba C ....lb.	.10⅛	.11⅜	.10⅛	.11⅜	.09¾	.12
MA sorts ....lb.	.06¾	.17¼	.06¾	.07¼	.06½	.07½
DBB ....lb.	.08	.08½	.08	.08½	.08	.09½
Dust ....lb.	.04⅞	.05⅜	.04⅞	.05⅜	...	...
Copal Pontianak, 224 lb cases,						
bold genuine ....lb.	.16⅛	.16⅝	.16⅛	.16⅝	.16⅛	.19
Mixed ....lb.	.14	.14½	.14	.14½	...	...
Chips ....lb.	.06⅞	.07⅞	.06⅞	.07⅞	...	...
Nubs ....lb.	.10¼	.10¾	.10¼	.10¾	...	...
Split ....lb.	.13⅞	.14⅜	.13⅞	.14⅜	...	...
Dammar Batavia, 136 lb cases						
A ....lb.	.19¾	.20¼	.19¾	.20¼	...	...
B ....lb.	.18¾	.19¼	.18¾	.19¼	...	...
C ....lb.	.16¾	.17¼	.16¾	.17¼	...	...
D ....lb.	.11¾	.12¼	.11¾	.12¼	...	...
A/D ....lb.	.14	.14½	.14	.14½	...	...
A/E ....lb.	.11¾	.12¼	.11¾	.12¼	...	...
E ....lb.	.07	.07½	.07	.07½	.07	.09½
F ....lb.	.06⅛	.06⅝	.06⅛	.06⅝	.05½	.06⅝
Singapore						
No. 1 ....lb.	.16½	.17	.16½	.17	.15½	.18
No. 2 ....lb.	.10¾	.11¼	.10¾	.11¼	.09⅜	.11
No. 3 ....lb.	.05⅛	.05⅝	.05⅛	.05⅝	.05⅛	.07
Chips ....lb.	.09¼	.09¾	.09¼	.09¾	.09	.10¼
Dust ....lb.	.05¼	.05¾	.05¼	.05¾	.05	.06
Seeds ....lb.	.06⅝	.07¼	.06⅝	.07¼	.06	.07¾
Ester ....lb.	.07¼	.08	.07¼	.08	...	...
Gamboge, pipe, cases .....lb.	.60	.65	.60	.65	.57	.65
Powdered, bbls ....lb.	.70	.75	.70	.75	.67	.75
Ghatti, sol. bgs ....lb.	.09	.09½	.09	.09½	.09	.09½
Karaya, pow bbls xxx ....lb.	.23	.25	.23	.25	.23	.25
xx ....lb.	.15	.16	.15	.16	.15	.16
No. 1 ....lb.	.08	.09	.08	.09	.08	.11
No. 2 ....lb.	.07	.08	.07	.08	.07	.09
Kauri, NY, San Francisco,						
Brown XXX, cases ....lb.	.60	.60½	.60	.60½	...	...
BX ....lb.	.33	.33½	.33	.33½	...	...
B1 ....lb.	.19	.19½	.19	.19½	...	...
B2 ....lb.	.14½	.15	.14½	.15	...	...
B3 ....lb.	.12	.12½	.12	.12½	...	...
Sale XXX ....lb.	.65	.65½	.65	.65½	...	...
No. 1 ....lb.	.40	.40½	.40	.40½	...	...
No. 2 ....lb.	.22	.22½	.22	.22½	...	...
No. 3 ....lb.	.15	.15½	.15	.15½	...	...
Kino, tins ....lb.	.75	.80	.75	.80	.75	.80
Mastic ....lb.	.46	.46½	.46	.46½	.35	.55½
Sandarac, prime quality, 200						
lb bgs & 300 lb cks ...lb.	.35	.35½	.35	.35½	.35	.50
Senegal, picked bgs ......lb.	.20	.21	.20	.21	17	.21
Sorts .... lb.	.09⅜	.10	.09⅜	.10	.08	.10
Thus, bbls ....280 lbs.	...	10.50	10.50	10.75	9.50	10.75
Strained ....280 lbs.	...	10.50	10.50	10.75	9.50	10.75
Tragacanth, No. 1, cases ....lb.	1.15	1.20	1.15	1.20	1.00	1.20
No. 2 ....lb.	1.05	1.10	1.05	1.10	...	...
No. 3 ....lb.	.95	1.00	.95	1.00	...	...
No. 4 ....lb.	.85	.90	.85	.90	...	...
No. 5 ....lb.	.75	.80	.75	.80	...	...
No. 6, bgs ....lb.	.14	.15	.14	.15	...	...
Sorts, bgs ....lb.	.11	.12	.11	.12	...	...
Yacca, bgs ....lb.	.03¼	.03¾	.03¼	.03¾	.03¼	.04

Prices

	Current	Market	1935 Low	1935 High	1934 Low	1934 High
Helium, cyl. (200 cu. ft.) cyl.	...	25.00	...	25.00	25.00	25.00
Hematite crystals, 400 lb bbls ....lb.	.16	.18	.16	.18	.16	.18
Paste, 500 bbls ....lb.	...	.11	...	.11	...	.11
Hemlock 25%, 600 lb bbls wks ....lb.	...	.02⅞	...	.02⅞	.02⅞	.04½
tks ....lb.	...	.02½	...	.02½	...	...
Hexalene, 50 gal drs wks..lb.	...	.30	...	.30	...	.30
Hexane, normal 60-70°C. Group 3, tks ....gal.	...	.14	...	.14	...	.14
Hexamethylenetetramine, drs ....lb.	.37	.39	.37	.39	.37	.39
Hexyl Acetate, delv drs ...lb.	.12	.12½	.12	.12½	.12	.12½
tks ....lb.	...	.11½	..	.11½	...	...
Hoof Meal, f.o.b. Chicago unit	...	2.65	2.65	2.70	1.85	2.70
South Amer. to arrive unit	...	1.85	...	1.85	1.65	1.80
Hydrogen Peroxide, 100 vol, 140 lb cbys ....lb.	.20	.21	.20	.21	.20	.21
Hydroxyamine Hydrochloride ....lb.	...	3.15	...	3.15	...	3.15
Hypernic, 51°, 600 lb bbls lb.	.17	.20	.17	.20	.17	.20
Indigo Madras, bbls ....lb.	1.25	1.30	1.25	1.30	1.25	1.30
20% paste, drs ....lb.	.15	.18	.15	.18	.15	.18
Synthetic, liquid ....lb.	...	.12	...	.12	...	.12
Iodine, crude ....per kilo	...	15s 1d	...	15s 1d	...	15s 1d
Resublimed, kgs ....lb.	...	1.90	...	1.90	1.90	2.30
Irish Moss, ord, bales ....lb.	.09	.10	.09	.10	.07	.10
Bleached, prime, bales ..lb.	.18	.19	.18	.19	.14	.19
Iron Acetate Liq. 17°, bbls lb.	.03	.04	.03	.04	.03	.04
Chloride see Ferric Chloride.						
Nitrate, coml, bbls ..100 lb.	2.75	3.25	2.75	3.25	2.75	3.25
Oxide, English ....lb.	.07½	.08¾	.07½	.08¾	.07½	.09
Isobutyl Carbinol (128-132°C) drs, wks ....lb.	.33	.34	.33	.34	.34	.34
tks, wks ....lb.	...	.32	...	.32	.32	.326
Isopropyl Acetate, tks ....lb.	...	.07½	...	.07½	.07	.07½
drs, frt allowed ....lb.	.08½	.09	.08½	.09	...	...
Ether, see Ether, isopropyl.						
Keiselguhr, 95 lb bgs, NY, Brown ....ton	60.00	70.00	60.00	70.00	60.00	70.00
Lead Acetate, brown, broken, f.o.b. NY, bbls ....lb.	...	.09½	...	.09½	.09½	.09½
White, broken, bbls ....lb.	...	.11	...	.11	.11	.11
cryst bbls ....lb.	...	.10½	...	.10½	.10½	.10½
gran, bbls ....lb.	...	.11	...	.11	.11	.11
powd, bbls ....lb.	...	.11¼	...	.11¼	.11¼	.11¼
Arsenate, East, jobbers, drs ....lb.	.09	.09½	.09	.09½	...	...
Dealers, drs ....lb.	.09¼	.10½	.09¼	.10½	...	...
West, jobbers, drs ....lb.	...	.09	...	.09	...	...
dealers, drs ....lb.	...	.10	...	.10	...	...
Linoleate, solid bbls ....lb.	.26	.26½	.26	.26½	.26	.26½
Metal, c-l, NY ....100 lb	...	3.50	3.50	3.70	3.50	4.25
Red, dry, 95% Pb_2O_4, delv ....lb.	.06	.068	.06	.07	.06	.07¾
97% Pb_2O_4, delv ....lb.	.06¼	.07	.06¼	.07¼	...	...
98% Pb_2O_4, delv ....lb.	.06½	.07¼	.06½	.07½	...	...
Nitrate, 500 lb bbls, wks..lb.	.10	.14	.10	.14	.10	.14
Oleate, bbls ....lb.	.15	.16	.15	.16	.15	.16
Resinate, precip, bbls ...lb.	...	.14	...	.14	.14	.18½
Stearate, bbls ....lb.	.22	.23	.22	.23	.22	.23
White, 500 lb bbls, wks..lb.	.06½	.07	.06½	.07	.06½	.07
Sulfate, 500 lb bbls, wks lb.	...	.06	...	.06	...	.06
Lime, chemical quicklime, f.o.b., wks, bulk ....ton	7.00	7.25	7.00	7.25	...	...
Hydrated, f.o.b., wks ..ton	8.50	12.00	8.50	12.00	...	...
Lime Salts, see Calcium Salts.						
Lime sulfur, sol, jobbers, tks ....gal.	...	.10	...	.10	...	...
drs ....gal.	.13½	.15½	.13½	.15½	...	...
Dealers, tks ....gal.	...	.10½	...	.10½	...	...
drs ....gal.	.14	.16½	.14	.16½	...	...
Linseed cake, bgs ....ton	...	35.00	35.00	37.50	21.50	37.50
Linseed Meal, bgs ....ton	...	37.50	.37.50	40.00	30.50	41.00
Litharge, coml, delv, bbls..lb.	.05	.06	.05	.06	.051	.06¾
Lithopone, dom, ordinary, delv, bgs ....lb.	.04½	.04¾	.04½	.04¾	.04½	.04¾
bbls ....lb.	.04¾	.05	.04¾	.05	.04¾	.05
High strength, bgs ....lb.	.06	.06¼	.06	.06¼	.06	.06¼
bbls ....lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
Titanated, bgs ....lb.	.06	.06¼	.06	.06¼	.06	.06¼
bbls ....lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
Logwood, 51°, 600 lb bbls lb.	.08½	.10½	.08½	.10½	.08½	.12½
Solid, 50 lb boxes ....lb.	.13½	.17½	.13½	.17½	.13½	.17½
Sticks ....ton	24.00	26.00	24.00	26.00	24.00	26.00
Madder, Dutch ....lb.	.22	.25	.22	.25	.22	.25
Magnesite, calc, 500 lb bbl ton	60.00	65.00	60.00	65.00	55.00	65.00
Magnesium Carb, tech, 70 lb bgs, wks ....lb.	.06	.06½	.06	.06½	.06	.06½
Chloride flake, 375 lb drs, c-l. wks ....ton	36.00	39.00	36.00	39.00	34.00	39.00
Magnesium fluosilicate, crys, 400 lb bbls, wks .... lb.	.10	.10½	.10	.10½	.10	.10½
Oxide, USP, light, 100 lb. bbls ....lb.	...	.42	...	.42	...	.42
Heavy, 250 lb bbls ..lb.	...	.50	...	.50	...	.50
Palmitate, bbls ....lb.	.22	.23	.22	.23	.21	.23
Stearate, bbls ....lb.	.19	.22	.19	.22	...	...
Linoleate, liq drs ....lb.	.18	.19	.18	.19	.18	.19
Resinate, fused, bbls ..lb.	.08¼	.08½	.08¼	.08½	.08¼	.08½
precip, bbls ....lb.	...	.12	...	.12	.11½	.12½
Manganese Borate, 30%, 200 lb bbls ....lb.	.15	.16	.15	.16	.15	.16
Chloride, 600 lb cks ....lb.	.09	.12	.09	.12	.07	.12
Dioxide, tech (peroxide), drs ....lb.	.03¾	.06	.03¾	.06	.03¾	.06
Mangrove 55%, 400 lb bbls lb.	...	.04	...	.04	...	.04
Bark, African ....ton	...	30.00	...	30.00	26.00	32.00
Marble Flour, blk ....ton	12.00	13.00	12.00	13.00	12.00	13.00
Mercuric chloride ....lb.	.73	.88	.73	.93	.73	.93

Current

Mercury
Orthodichlorobenzene

	Current Market		1935		1934	
			Low	High	Low	High
Mercury metal ...76 lb. flasks	...	73.50	...	73.50	66.50	79.00
Meta-nitro-aniline ....lb.	.67	.69	.67	.69	.67	.69
Meta-nitro-paratoluidine 200 lb bbls ....lb.	1.40	1.55	1.40	1.55	1.40	1.55
Meta-phenylene-diamine 300 lb bbls ....lb.	.80	.84	.80	.84	.80	.84
Peroxide, 100 lb cs ....lb.	1.20	1.25	1.20	1.25	1.20	1.25
Silicofluoride, bbls .....lb.	.09	.10	.09	.10	.09	.11
Stearate, bbls ....lb.	.19	.20	.19	.20	.19	.20
Meta-toluene-diamine, 300 lb bbls ....lb.	.67	.69	.67	.69	.67	.69
Methanol, 95%, frt allowed, drs ....gal. *o*	.37½	.58	.37½	.58	.37½	.58
tks, frt allowed ....gal. *o*	.33	.36½	.33	.36½	.33	.36½
97% frt allowed, drs gal. *o*	.38½	.59	.38½	.59	.38½	.59
tks, frt allowed ....gal. *o*	.34	.37½	.34	.37½	.34	.37½
Pure, frt allowed, drs gal. *o*	.40	.61	.40	.61	.40	.61
tks, frt allowed ....gal. *o*	.35½	.39	.35½	.39	.35½	.39
Synthetic, frt allowed, drs ....gal. *o*	.40	.61	.40	.61	.40	.61
tks, frt allowed ....gal. *o*	.35½	.39	.35½	.39	.35½	.39
Methyl Acetate, dom, 98-100%, drs ....lb.	.18	.18½	.18	.18½	.18	.18½
Synthetic, 410 lb drs ...lb.	.16	.17	.16	.17	.16	.17
tks ....lb.	...	.15	...	.15	.15	.15
Acetone, frt allowed, drs ....gal. *p*	.53½	.73½	.53½	.73½	...	...
tks, frt allowed, drs gal. *p*	.49	.52½	.49	.52½	...	...
Synthetic, frt allowed, east of Rocky M., drs gal. *p*	.57½	.60	.57½	.60	.57½	.60
tks, frt allowed	...	.53	...	.53	...	...
West of Rocky M., frt allowed, drs ....gal. *p*	.60	.63	.60	.63	...	...
tks, frt allowed ..gal. *p*	...	.56	...	.56	...	...
Hexyl Ketone, pure, drs lb.	...	.60	...	.60	.60	1.20
Anthraquinone ....lb.	.65	.67	.65	.67	.65	.67
Butyl Ketone, tks ......lb.	...	.10½	...	.10½	.10½	.10½
Chloride, 90 lb cyl .....lb.	...	.45	...	.45	.45	.45
Ethyl Ketone, tks ......lb.	...	.07½	...	.07½	.07½	.07½
Propyl carbinol, drs ...lb.	.60	.75	.60	.75	.60	.75
Mica, dry grd, bgs, wks ..lb.	35.00	...	35.00	...	...	...
Michler's Ketone, kgs ....lb.	...	2.50	...	2.50	...	2.50
Molasses, blackstrap, tks, f.o.b. NY ....gal.	.06	.06⅛	.06	.06⅛	.06	.09
Monoamylamine, drs, wks lb.	...	1.00	...	1.00	...	1.00
Monochlorobenzene, see Chlorobenzene, mono.						
Monomethylparaminosulfate, 100 lb drs ....lb.	3.75	4.00	3.75	4.00	3.75	4.00
Myrobalans 25%, liq bbls..lb.	...	.04¼	...	.04¼	.03¾	.04¼
50% Solid, 50 lb boxes lb.	.06	.06¼	.06	.06¼	.06	.06¼
J1 bgs ....ton	25.00	25.50	25.00	27.00	24.50	32.00
J2 bgs ....ton	15.25	15.75	15.25	15.75	15.75	18.00
R2 bgs ....ton	16.00	16.50	16.00	16.50	16.25	18.00
Naphtha. v.m. & p. (deodorized) see petroleum solvents.						
Naphthalene, dom, crude, bgs, wks ....lb.	1.65	2.40	1.65	2.40	...	...
Imported, cif, bgs ....lb.	...	1.90	...	1.90	1.75	1.90
Dyestuffs, bgs, bbls, Eastern wks ....lb.	.04¼	.04¾	.04¼	.04¾	...	...
Balls, ref'd, bbls, Eastern wks ....lb.	.04½	.05¼	.04½	.05¼	...	...
Flakes, ref'd, bbls, Eastern wks ....lb.	.04½	.05¼	.04½	.05¼	...	...
Dyestuffs, bgs, bbls, Mid-West wks ....lb. *q*	.04¾	.05¼	.04¾	.05¼	...	...
Balls, ref'd, bbls, Mid-West wks ....lb. *q*	.05	.05¾	.05	.05¾	...	...
Flakes, ref'd, bbls, Mid-West wks ....lb. *q*	.05	.05¾	.05	.05¾	...	...
Nickel Chloride, bbls .....lb.	.18	.19	.18	.19	.18	.19
Oxide, 100 lb kgs, NY..lb.	.35	.37	.35	.37	.35	.37
Salt, 400 lb bbls, NY ...lb.	.12½	.13	.12½	.13	.11½	.13
Single, 400 lb bbls, NY lb.	.11½	.12	.11½	.12	.11½	.12
Metal ingot ....lb.	...	.35	...	.35	.35	.35
Nicotine, free 50%, 8 lb tins, cases	8.25	10.15	8.25	10.15	8.25	10.15
Sulfate, 55 lb drs ......lb.	.77	.80	.67	.80	.67	.75
Nitre Cake, blk ....ton	12.00	14.00	12.00	14.00	12.00	14.00
Nitrobenzene, redistilled, 1000 lb drs, wks ....lb.	.09	.11	.09	.11	.09	.11
tks ....lb.	...	.08½	...	.08½	...	.08½
Nitrocellulose, c-l-l cl, wks lb.	.27	.34	.27	.34	.27	.34
Nitrogenous Mat'l, bgs, imp ....unit	2.65	2.75	2.65	2.75	...	...
dom, Eastern wks ....unit	...	Nom.	...	Nom.	2.35	3.25
dom, Western wks ....unit	...	2.30	...	2.30	...	...
Nitronaphthalene, 550 lb bbls ....lb.	.24	.25	.24	.25	.24	.25
Nutgalls Aleppy, bgs .....lb.	.19	.20	.19	.20	.18	.20
Chinese, bgs ....lb.	.19	.20	.19	.20	.17	.20
Oak Bark Extract, 25%, bbls lb.	...	.03½	...	.03½	.03⅜	.03½
tks ....lb.	...	.02¾	...	.02¾	...	...
Orange-Mineral, 1100 lb cks NY ....lb.	.09¼	.10	.09¼	.10	.09¼	.10½
Orthoaminophenol, 50 lb kgs.lb.	2.15	2.25	2.15	2.25	2.15	2.25
Orthoanisidine, 100 lb drs lb.	.82	.84	.82	.84	.82	1.15
Orthochlorophenol, drs ....lb.	.50	.65	.50	.65	.50	.65
Orthocresol, drs ....lb.	.13	.15	.13	.15	.13	.15
Orthodichlorobenzene, 1000 lb drs ....lb.	.05½	.06	.05½	.06	.05½	.06

o Country is divided in 5 zones, prices varying by zone. In drum prices range covers both zone and c-l and lcl quantities in the 5 zones; in each case, bbl. prices are 2½c higher; synthetic is not shipped in bbls.; *p* Country is divided into 5 zones. Also see footnote directly above; *q* Naphthalene quoted on Pacific Coast F.A.S. Phila. or N. Y.

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Orthonitrochlorobenzene, 1200 lb drs, wks ....lb.	.28	.29	.28	.29	.28	.29
Orthonitrotoluene, 1000 lb drs, wks ....lb.	.05½	.06	.05½	.06	.05½	.06
Orthonitrophenol, 350 lb drs ....lb.	.52	.80	.52	.80	.52	.80
Orthotoluidine, 350 lb bbls, l-c-l ....lb.	.14½	.15	.14½	.15	.14	.15
Orthonitroparachlorphenol, tins ....lb.	.70	.75	.70	.75	.70	.75
Osage Orange, cryst .... lb.	.17	.25	.17	.25	.16	.25
51 deg liquid ....lb.	.07	.07¾	.07	.07¾	.07	.07¾
Powd, 100 lb bgs ......lb.	.14½	.15	.14½	.15	.14½	.15
Paraffin, refd, 200 lb cs slabs						
122-127 deg M P ....lb.	.04	.04¾	.04	.04¾	.04½	.04¾
128-132 deg M P ....lb.	.05	.0515	.05	.0515	.04¾	.0515
133-137 deg M P ....lb.	.0575	.06	.0575	.06	.05	.06
Para aldehyde, 110-55 gal drs ....lb.	.16	.18	.16	.18	.16	.18
Aminoacetanilid, 100 lb kgs ....lb.	...	.85	...	.85	.52	.85
Aminohydrochloride, 100 lb kgs .... lb.	1.25	1.30	1.25	1.30	1.25	1.30
Aminophenol, 100 lb kgs lb.	...	1.05	...	1.05	.78	1.05
Chlorophenol, drs ......lb.	.50	.65	.50	.65	.50	.65
Coumarone, 330 lb drs ..lb.	...	...	...	...	...	...
Cymene, refd, 110 gal dr ....gal.	2.25	2.50	2.25	2.50	2.25	2.50
Dichlorobenzene 150 lb bbls wks ....lb.	.16	.20	.16	.20	.16	.20
Nitroacetanilid, 300 lb bbls ....lb.	.45	.52	.45	.52	.45	.52
Nitroaniline, 300 lb bbls, wks .... lb.	.48	.55	.48	.55	.48	.55
Nitrochlorobenzene, 1200 lb drs, wks ....lb.	.23½	.24	.23½	.24	.23½	.24
Nitro-orthotoluidine, 300 lb bbls ....lb.	2.75	2.85	2.75	2.85	2.75	2.85
Nitrophenol, 185 lb bbls lb.	.45	.50	.45	.50	.45	.50
Nitrosodimethylaniline, 120 lb bbls ....lb.	.92	.94	.92	.94	.92	.94
Nitrotoluene, 350 lb bbls lb.	.35	.37	.35	.37	.35	.37
Phenylenedamine, 350 lb bbls .... lb.	1.25	1.30	1.25	1.30	1.25	1.30
Para Tertiary amyl phenol, wks, drs ....lb.	.32	.50	.32	.50	.32	.50
Toluenesulfonamide, 175 lb bbls ....lb.	.70	.75	.70	.75	.70	.75
tks, wks ....lbs.	...	.31	...	.31	...	...
Toluenesulfonchloride, 410 lb bbls, wks ....lb.	.20	.22	.20	.22	.20	.22
Toluidine, 350 lb bbls, wks ....lb.	.56	.60	.56	.60	.56	.60
Paris Green, Arsenic Basis						
100 lb kgs ....lb.	...	.24	...	.24	.23	.24
250 lb kgs ....lb.	...	.22	...	.22	...	.22
Perchlorethylene, 50 gal drs ....lb.	...	.15	...	.15	...	.15
Persian Berry Ext, bbls ..lb.	.55	Nom.	.55	Nom.	.55	Nom.
Pentane, normal, 28-38°C, group 3 tks ....gal.	...	.09	...	.09	.09	.09
drs, group 3 ....gal.	.10	.15	.10	.15	...	...
Petrolatum, dark amber, bbls ....lb.	.02⅝	.02⅞	.02⅝	.02⅞	...	...
Light, bbls ....lb.	.02⅞	.03⅛	.02⅞	.03⅛	...	...
Medium, bbls ....lb.	.02¾	.03	.02¾	.03	...	...
Dark green, bbls ....lb.	.02½	.02¾	.02½	.02¾	...	...
White, lily, bbls ....lb.	.06⅜	.06½	.06⅜	.06½	...	...
White, snow, bbls ......lb.	.07⅜	.07½	.07⅜	.07½	...	...
Red, bbls ....lb.	.02½	.02¾	.02½	.02¾	...	...
Petroleum Ether, 30-60°, group 3, tks ....gal.	...	.13	...	.13	.11	.13
drs, group 3 ....gal.	.15	.16	.15	.16	.15	.17

PETROLEUM SOLVENTS AND DILUENTS

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Cleaners naphthas, group 3, tks, wks ....gal.	...	.06⅞	...	.06⅞	...	...
Bayonne, tks, wks ..gal.	...	.09	...	.09	...	...
West Coast, tks ....gal.	...	.15	...	.15	...	...
Hydrogenated naphthas, frt allowed East, tks ...gal.	...	.17½	...	.17½	...	...
No. 2, tks ....gal.	...	.22½	...	.22½	...	...
No. 3, tks ....gal.	...	.17½	...	.17½	...	...
No. 4, tks ....gal.	...	.22½	...	.22½	...	...
Lacquer diluents, tks, Bayonne ....gal.	.12	.12½	.12	.12½	.12	.12½
Group 3, tks ....gal.	...	.07⅞	...	.07⅞	.06⅞	.08⅜
Naphtha, V.M.P., East, tks, wks ....gal.	...	.09	...	.09	.09	.09½
Group 3, tks, wks ...gal.	...	.06⅞	...	.06⅞	.06¼	.07¼
Petroleum thinner, East, tks, wks ....gal.	...	.09	...	.09	.09	.09
Group 3, tks, wks ...gal.	...	.05⅞	...	.05⅞	.05⅞	.06⅜
Rubber Solvents, stand grd, East, tks, wks ......gal.	...	.09	...	.09	.09	.09½
Group 3, tks, wks ..gal.	...	.06⅞	...	.06⅞	.06⅜	.06⅞
Stoddard Solvent, East, tks, wks .... gal.	...	.09	...	.09	.09	.09½
Group 3, tks, wks ...gal.	...	.06⅜	...	.06⅜	.05¾	.07⅛
Phenol, 250-100 lb drs ....lb.	.14¼	.15	.14¼	.15	.14¼	.15
Phenyl-Alpha-Naphthylamine, 100 lb kgs ....lb.	...	1.35	...	1.35	...	1.35
Phenyl Chloride, drs .....lb.	...	.16	...	.16	...	.16
Phenylhydrazine Hydrochloride ....lb.	2.90	3.00	2.90	3.00	2.90	3.00
Phloroglucinol, tech, tins ..lb.	15.00	16.50	15.00	16.50	15.00	16.50
CP, tins ....lb.	20.00	22.00	20.00	22.00	20.00	22.00

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Phosphate Rock, f.o.b. mines						
Florida Pebble, 68% basis						
....................ton	...	3.25	...	3.25	2.85	3.25
70% basis ....ton	...	3.90	...	3.90	3.35	3.90
72% basis ....ton	...	4.40	...	4.40	3.85	4.40
75-74% basis ....ton	...	5.40	...	5.40	4.90	5.40
75% basis ....ton	...	5.50	...	5.50	5.05	5.50
77-80% basis ....ton	...	6.50	...	6.50	5.90	6.50
Tennessee, 72% basis ..ton	...	4.75	...	4.75	4.75	5.00
Phosphorous Oxychloride 175						
lb cyl ....lb.	.16	.20	.16	.20	.16	.20
Red, 110 lb cases ......lb.	.44	.45	.44	.45	.44	.45
Yellow, 110 lb cs, wks..lb.	.28	.33	.28	.33	.28	.33
Sesquisulfide, 100 lb cs..lb.	.38	.44	.38	.44	.38	.44
Trichloride, cyl ....lb.	.16	.20	.16	.20	.16	.20
Phthalic Anhydride, 100 lb						
drs, wks ....lb.	.14½	.15½	.14½	.15½	.14½	.15½
Pine Oil, 55 gal drs or bbls						
Destructive dist ....lb.	.48	.50	.48	.50	.48	.62
Steam dist wat wh bbls gal.	.64	.65	.64	.65	.64	.65
tks ....gal.	...	.59	...	.59	...	...
Straw color, bbls ......gal.	...	.59	...	.59	...	...
tks ....gal.	...	.54	...	.54	...	...
Pitch Hardwood, wks ....ton	...	20.00	...	20.00	...	20.00
Burgundy, dom, bbls, wks						
....................lb.	...	.03½	...	.03½	...	...
Imported ....lb.	.11	.13	.11	.13	...	...
Coaltar, bbls, wks .....ton	...	19.00	...	19.00	...	...
Petroleum, see Asphaltum in Gums' Section.						
Pine, bbls ....bbl.	3.75	4.25	3.75	4.25	...	...
Stearin, drs ....lb.	.03	.04½	.03	.04½	...	...
Platinum, refd ....oz.	35.00	36.00	35.00	36.00	35.00	38.00

POTASH

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Potash, Caustic, wks, sol..lb.	.06¼	.06½	.06¼	.06½	.06¼	.07⅜
flake ....lb.	.07	.07⅜	.07	.07⅜	.07	.08¼
Liquid tks ....lb.	...	.02⅞	...	.02⅞	.02⅞	.03⅝
Potash Salts, Rough Kainit						
14% basis ....ton	...	8.50	...	8.50	8.50	9.70
Manure Salts, imported						
20% basis, blk ....ton	...	8.60	...	8.60	8.60	12.00
30% basis, blk ....ton	...	12.90	...	12.90	12.90	19.15
Domestic, cif ports, blk unit	...	.43	...	.43	...	...
Potassium Acetate ....lb.	.26	.28	.26	.28	.26	.28
Potassium Muriate, 80% basis						
bgs ....ton	...	22.00	...	22.00	22.00	37.15
Dom, blk ....unit	...	.40	...	.40	...	...
Pot & Mag Sulfate, 48% basis						
bgs ....ton	...	22.50	...	22.50	22.50	25.00
Potassium Sulfate, 90% basis						
bgs ....ton	...	35.00	...	35.00	35.00	42.15
Potassium Bicarbonate, USP						
320 lb bbls ....lb.	.07½	.09	.07½	.09	.07½	.09
Bichromate Crystals, 725 lb						
cks ....lb.	.08⅛	.08⅝	.08⅛	.08⅝	.08⅛	.08⅝
Binoxalate, 300 lb bbls..lb.	.22	.23	.22	.23	.14	.23
Bisulfate, 100 lb kgs ..lb.	.35	.36	.35	.36	.33	.36
Carbonate, 80-85% calc 800						
lb cks ....lb.	.07½	.07⅞	.07½	.07⅞	.07	.07⅞
liquid, tks ....lb.	...	...	...	...	...	...
drs, wks ....lb.	...	...	...	...	...	...
Chlorate crys, powd, 112 lb						
kgs, wks ....lb.	...	.09¾	...	.09¾	.08½	.09¾
gran, kgs ....lb.	.12	.13	.12	.13	...	...
powd, kgs ....lb.	.08¾	.09¾	.08¾	.09¾	...	...
Chloride, crys, bbls ....lb.	.04	.04¾	.04	.04¾	.04	.04¾
Chromate, kgs ....lb.	.23	.28	.23	.28	.23	.28
Cyanide, 110 lb cases ..lb.	.55	.57½	.55	.57½	.55	.60
Iodide, 75 lb bbls ......lb.	...	1.40	...	1.40	1.40	2.70
Metabisulfite, 300 lb bbls lb.	...	.15	...	.15	.10½	.15
Oxalate, bbls ....lb.	.16	.24	.16	.24	.16	.24
Perchlorate, cks, wks ...lb.	.09	.11	.09	.11	.09	.11
Permanganate, USP, crys,						
500 & 1000 lb drs, wks lb.	.18½	.19½	.18½	.19½	.18½	.19½
Prussiate, red, 112 lb kgs lb.	.35	.38½	.35	.38½	.35	.39
Yellow, 500 lb casks ..lb.	.18	.19	.18	.19	.18	.19
Tartrate Neut, 100 lb kgs lb.	...	.21	...	.21	...	.21
Titanium Oxalate, 200 lb						
bbls ....lb.	.32	.35	.32	.35	.32	.35
Propane, group 3, tks	...	.07	...	.07	...	.07
Pumice Stone, lump bgs ..lb.	.04½	.06	.04½	.06	.04½	.06
250 lb bbls ....lb.	.05	.07	.05	.07	.05	.07
Powd, 350 lb bgs ......lb.	.02½	.03	.02½	.03	.02½	.03
Putty, coml, tubs .....100 lb.	...	2.75	...	2.75	2.25	2.75
Linseed Oil, kgs ...100 lb.	...	4.50	...	4.50	4.00	4.50
Pyridine, 50 gal drs .....gal.	...	1.25	...	1.25	...	1.25
Pyrites, Spanish cif Atlantic						
ports, blk ....unit	.12	.13	.12	.13	.12	.13
Pyrocatechin, CP, drs, tins						
....................lb.	2.75	3.00	2.75	3.00	2.75	3.00
Quebracho, 35% liq tks ...lb.	...	.02⅝	...	.02⅝	.02¼	.02⅝
450 lb bbls, c-l ......lb.	...	.03⅛	...	.03⅛	.02¾	.03⅛
Solid, 63%, 100 lb bales						
cif ....lb.	...	.03⅝	...	.03⅝	.02⅞	.03⅝
Clarified, 64%, bales..lb.	...	.03⅞	...	.03⅞	.03	.03⅞
Quercitron, 51 deg liq, 450 lb						
bbls ....lb.	.06	.06½	.06	.06½	.05½	.06½
Solid, 100 lb boxes .....lb.	.10	.12	.10	.12	.09½	.13
R Salt, 250 lb bbls, wks ..lb.	.44	.45	.44	.45	.40	.45
Resorcinol tech, cans .....lb.	.75	.80	.75	.80	.65	.80
Rochelle Salt, cryst ......lb.	.14½	.15	.14½	.15	.12½	.16
Powd, bbls ....lb.	...	.13½	...	.13½	...	...
Rosin Oil, bbls, first run gal.	...	.38	.38	.45	.45	.48
Second run ....gal.	...	.43	.43	.48	.48	.53
Third run, drs ....gal.	..	.50	.50	.60	...	...

Prices

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Rosins 600 lb bbls, 280 lb unit ex. yard NY:						
B	...	5.25	...	5.25	4.50	5.75
D	...	5.25	...	5.25	4.60	5.85
E	...	5.45	5.25	5.45	4.80	6.50
F	...	5.90	5.35	5.90	5.00	6.75
G	...	5.90	5.45	5.90	5.05	6.75
H	...	5.97½	5.50	5.97½	5.10	6.75
I	...	6.00	5.55	6.00	6.75	4.05
K	...	6.00	5.65	6.00	5.30	6.75
M	...	6.02½	5.65	6.02½	5.45	6.80
N	...	6.40	5.75	6.40	5.50	6.80
WG	...	6.87½	6.05	6.87½	5.70	6.80
WW	...	7.55	6.40	7.55	5.90	6.85
Rosins, Gum, Savannah (280 lb unit):						
B	...	4.00	3.80	4.00	...	...
D	...	4.00	4.00	4.20	...	...
E	...	4.20	4.00	4.20	...	...
F	...	4.65	4.15	4.65	...	...
G	...	4.65	4.25	4.65	...	...
H	4.70	4.75	4.30	4.75	...	...
I	4.70	4.75	4.35	4.75	...	...
K	...	4.75	4.45	4.75	...	...
M	...	4.75	4.45	4.75	...	...
N	...	5.15	4.50	5.15	...	...
WG	5.60	5.65	4.80	5.60	...	...
WW	6.20	6.25	5.25	6.20	...	...
X	6.20	6.25	5.25	6.20	...	...
Rosins, Wood, wks (280 lb unit), FF	5.40	6.25	4.30	6.35	...	...
I	6.05	7.00	4.65	7.00	...	...
M	6.30	7.25	5.00	7.25	...	...
N	6.80	7.75	5.40	7.75	...	...
Rosin, Wood. c-l, FF grade, NY	...	5.30	5.10	5.30	5.10	6.13
Rotten Stone, bgs mines ..ton	23.50	24.00	23.50	24.00	23.50	24.00
Lump, imported, bbls ..lb.	.05	.07	.05	.07	.05	.07
Selected, bbls ....lb.	.08	.10	.08	.10	.08	.12
Powdered, bbls ....lb.	.02½	.05	.02½	.05	.02½	.05
Sago Flour, 150 lb bgs ....lb.	.02¾	.03¾	.02¾	.03¾	.02½	.03¾
Sal Soda, bbls, wks ..100 lb.	...	1.30	...	1.30	1.10	1.30
Salt Cake, 94-96%, c-l, wks ....ton	13.00	18.00	13.00	18.00	13.00	18.00
Chrome, c-l, wks ......ton	12.00	13.00	12.00	13.00	12.00	13.00
Saltpetre, double refd, gran, 450-500 lb bbls ......lb.	.059	.06¼	.059	.06¼	.059	.06¼
Powd, bbls ....lb.	.069	.07⅞	.069	.07⅞	...	...
Cryst, bbls ....lb.	.069	.08	.069	.08	...	...
Satin, White, 550 lb bbls ..lb.	...	.01½	...	.01½	...	.01½
Shellac, Bone dry, bbls ..lb. r	.25	.27	.25	.32	.26	.37
Garnet, bgs ....lb.	.22	.25	.22	.27	.26	.32
Superfine, bgs ....lb. s	.21½	.23	.21½	.28	.23	.31
T. N., bgs ....lb. s	.18	.20½	.18	.25	...	...
Schaeffer's Salt, kgs ......lb.	.48	.50	.48	.50	.48	.50
Silver Nitrate, vials ......oz.	...	.38	.38	.38¼	.31⅞	.40½
Slate Flour, bgs, wks ....ton	9.00	10.00	9.00	10.00	9.00	10.00
Soda Ash, 58% dense, bgs, c-l, wks ....100 lb.	...	1.25	...	1.25	...	1.25
58% light, bgs .....100 lb.	...	1.23	...	1.23	...	1.25
blk ....100 lb.	...	1.05	...	1.05	...	1.05
paper bgs ....100 lb.	...	1.20	...	1.20	...	1.20
bbls ....100 lb.	...	1.50	...	1.50	...	1.50
Soda Caustic, 76% grnd & flake, drs ....100 lb.	...	3.00	...	3.00	...	3.00
76% solid, drs .....100 lb.	...	2.60	...	2.60	...	2.60
Liquid sellers, tks, 100 lbs.	...	2.25	...	2.25	...	2.25
Sodium Abietate, drs .....lb.	...	.08	...	.08	.03	.08
Acetate, tech, 450 lb bbls, wks ....lb.	.04½	.05	.04½	.05	.04½	.05
Alignate, drs ....lb.	...	.64	...	.64	.50	.64
Arsenate, drs ....lb.	...	.10½	...	.10½	.07¾	.10½
Arsenite, liq, drs .....gal.	.40	.75	.40	.75	.40	.75
Benzoate, USP, kgs ... lb.	.46	.48	.46	.48	.45	.48
Bicarb, 400 lb bbl, wks . 100 lb.	...	1.85	...	1.85	1.85	1.85
Bichromate, 500 lb cks, wks ....lb.	.06⅛	.06⅝	.06⅛	.06⅝	.06⅛	.06⅝
Bisulfite, 500 lb bbl, wks lb.	.03¼	.036	.03¼	.036	.03	.036
35-40% sol cbys, wks 100 lb.	1.95	2.10	1.95	2.10	...	...
Chlorate, bgs, wks .....lb.	.06¼	.07½	.06¼	.07½	.06¼	.07½
Chloride, tech ....ton	13.60	16.50	13.60	16.50	11.40	16.50
Cyanide, 96-98%, 100 & 250 lb drs, wks ......lb.	.15½	.17½	.15½	.17½	.15½	.17½
Fluoride, 90%, 300 lb bbls, wks ....lb.	.07¼	.08¼	.07¼	.08¼	.07¼	.09½
Hydrosulfite, 200 lb bbls, f.o.b. wks ....lb.	.19	.20	.19	.21	.19½	.21
Hyposulfite, tech, pea crys 375 lb bbls, wks 100 lb.	2.50	3.00	2.50	3.00	2.40	3.00
Tech, reg cryst, 375 lb bbls, wks ......100 lb.	2.40	2.75	2.40	2.75	2.40	2.75
Iodide ....lb.	...	2.40	...	2.40	2.40	3.50
Metanilate, 150 lb bbls ..lb.	.41	.42	.41	.42	.41	.42
Metasilicate, gran, c-l, wks ....100 lb.	2.65	3.05	2.65	3.05	2.65	3.05
cryst, bbls, wks ..100 lb.	...	3.25	...	3.25	...	3.25
Monohydrate, bbls .....lb.	...	.02½	...	.02½	...	.02½
Napthenate, drs ....lb.	...	.09	...	.09	.09	.13
Naphthionate, 300 lb bbl lb.	.52	.54	.52	.54	.52	.54
Nitrate, 92%, crude, 200 lb bgs, c-l, NY ....ton	...	24.80	...	24.80	24.80	26.30
100 lb bgs ....ton	...	25.50	...	25.50	25.50	27.00
Bulk ....ton	...	23.50	...	23.50	23.50	24.50

r Bone dry prices at Chicago 1c higher; Boston ½c; Pacific Coast 3c; Philadelphia deliveries f.o.b. N. Y.; refined 6c higher in each case; s T. N. and Superfine prices quoted f.o.b. N. Y. and Boston; Chicago prices 1c higher; Pacific Coast 3c; Philadelphia f.o.b. N. Y.

Current

Sodium Nitrite
Thiocarbanilid

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Sodium (continued)						
Nitrite, 500 lb bbls ....lb.	.07¼	.08	.07¼	.08	.07¼	.08
Orthochlorotoluene, sulfonate, 175 lb bbls, wks lb.	.25	.27	.25	.27	.25	.27
Perborate, 275 lb bbls ..lb.	.18	.19	.18	.19	.18	.19
Peroxide, bbls, 400 lb ..lb.	...	.17	...	.17	...	.17
Phosphate, di-sodium, tech, 310 lb bbls, wks 100 lb.	...	2.20	...	2.20	2.10	2.40
bgs, wks ......100 lb.	...	2.00	...	2.00	...	...
tri-sodium, tech, 325 lb bbls, wks ......100 lb.	...	2.60	...	2.60	2.60	2.70
bgs, wks ......100 lb.	...	2.60	...	2.60	...	...
Picramate, 160 lb kgs ..lb.	.67	.69	.67	.69	.69	.72
Prussiate, Yellow, 350 lb bbl, wks ....lb.	.11½	.12	.11½	.12	.11½	.12
Pyrophosphate, anhyd, 100 lb bbls ....lb.	...	.15	...	.15	...	.15
Silicate, 60°, 55 gal drs, wks ....100 lb.	1.65	1.70	1.65	1.70	1.65	1.70
40°, 35 gal drs, wks 100 lb.	...	.80	...	.80	...	.80
tks, wks ....100 lb.	...	.65	...	.65	...	.65
Silicofluoride, 450 lb bbls NY ....lb.	.04½	.04¾	.04½	.04¾	.04¾	.06
Stannate, 100 lb drs ....lb.	.34	.37	.34	.37	.33½	.37½
Stearate, bbls ....lb.	.20	.25	.20	.25	.20	.25
Sulfanilate, 400 lb bbls..lb.	.16	.18	.16	.18	.16	.18
Sulfate Anhyd, 550 lb bbls c-l, wks ....100 lb. ‡	1.15	1.50	1.15	2.35	2.20	2.85
Sulfide, 80% cryst, 440 lb bbls, wks ....lb.	...	.02¼	...	.02¼	.02¼	.02½
62% solid, 650 lb drs, c-l, wks ....lb.	...	.03	...	.03	...	.03
Sulfite, cryst, 400 lb bbls, wks ....lb.	.023	.02½	.023	.02½	.02¼	.02½
Sulfocyanide, bbls .....lb.	.32	.42½	.32	.42½	.28	.42½
Tungstate, tech, crys, kgs ....lb.	...	.90	...	.90	.70	.90
Spruce Extract, ord, tks ..lb.	...	.01	...	.01	...	.01
Ordinary, bbls ....lb.	...	.01½	...	.01½	...	.01½
Super spruce ext, tks ...lb.	...	.01⅝	...	.01⅝	...	.01⅜
Super spruce ext, bbls ..lb.	...	.01⅞	...	.01⅞	...	.01⅞
Super spruce ext, powd, bgs ....lb.	...	.04	...	.04	...	.04
Starch, Pearl, 140 lb bgs ....100 lb.	3.46	3.56	3.46	3.56	2.81	3.76
Powd, 140 lb bgs ...100 lb.	3.56	3.66	3.56	3.66	2.71	3.66
Potato, 200 lb bgs ......lb.	.05¼	.06	.05¼	.06	.05¼	.06
Imp, bgs ....lb.	.06	.06½	.06	.06½	.06	.06½
Rice, 200 lb bbls ....lb.	.07½	.08½	.07½	.08½	.07½	.08½
Wheat, thick bgs ....lb.	...	.08¼	...	.08¼	.06¼	.08¼
Strontium carbonate, 600 lb. bbls, wks ....lb.	.07¼	.07½	.07¼	.07½	.07¼	.07½
Nitrate, 600 lb bbls, NY ....lb.	.08¾	.09½	.08¾	.09½	.08¾	.11
Sulfur	...	...	...	...	...	...
Crude, f.o.b. mines ....ton	18.00	19.00	18.00	19.00	18.00	19.00
Flour, coml, bgs ....100 lb.	1.60	2.35	1.60	2.35	1.60	2.35
bbls ....100 lb.	1.95	2.70	1.95	2.70	1.95	2.70
Rubbermakers, bgs ..100 lb.	2.20	2.80	2.20	2.80	2.20	2.80
bbls ....100 lb.	2.55	3.15	2.55	3.15	2.55	3.15
Extra fine, bgs .....100 lb.	2.40	3.00	2.40	3.00	2.40	3.00
Superfine, bgs .....100 lb.	2.20	2.80	2.20	2.80	2.20	2.80
bbls ....100 lb.	2.25	3.10	2.25	3.10	2.25	3.10
Flowers, bgs ....100 lb.	3.00	3.75	3.00	3.75	3.00	3.75
bbls ....100 lb.	3.35	4.10	3.35	4.10	3.35	4.10
Roll, bgs ....100 lb.	2.35	3.10	2.35	3.10	2.35	3.10
bbls ....100 lb.	2.50	3.25	2.50	3.25	2.50	3.25
Sulfur Chloride, red, 700 lb drs, wks ....lb.	.05	.05½	.05	.05½	.05	.05½
Yellow, 700 lb drs, wks lb.	.03½	.04½	.03½	.04½	.03½	.04½
Sulfur Dioxide, 150 lb cyl lb.	.08½	.10	.08½	.10	.07	.10
Multiple units, wks ....lb.	...	.06½	...	.06½	...	...
tks, wks ....lb.	...	.04¾	...	.04¾	...	...
Refrigeration, cyl, wks ...lb.	...	.13	...	.13	...	...
Multiple units, wks ....lb.	...	.09¼	...	.09¼	...	...
Sulfuryl Chloride ....lb.	.15	.40	.15	.40	.15	.40
Sumac, Italian, grd ......ton	59.00	62.00	...	60.00	58.00	75.00
dom, bgs, wks ....ton	...	35.00	...	35.00	...	...
Superphosphate, 16% bulk, wks ....ton	...	8.50	...	8.50	8.00	8.50
Run of pile ....ton	...	8.00	...	8.00	7.50	8.00
Talc, Crude, 100 lb bgs, NY ....ton	14.00	15.00	14.00	15.00	12.00	15.00
Refd, 100 lb bgs, NY ton	16.00	18.00	16.00	18.00	16.00	18.00
French, 220 lb bgs, NY ton	22.00	30.00	22.00	30.00	27.50	30.00
Refd, white, bgs .....ton	45.00	60.00	45.00	60.00	45.00	60.00
Italian, 220 lb bgs to arr ton	70.00	75.00	70.00	75.00	70.00	75.00
Refd, white, bgs, NY ton	75.00	80.00	75.00	80.00	75.00	80.00
Tankage Grd, NY ....unit §	...	2.75	2.65	2.75	2.50	3.25
Ungrd ....unit §	...	2.50	2.40	2.50	2.00	2.75
Fert grade, f.o.b. Chicago ....unit §	...	2.55	2.50	2.60	1.80	2.40
South American cif..unit §	...	3.15	3.00	3.15	2.75	3.10
Tapioca Flour, high grade, bgs ....lb.	.0215	.05	.0215	.05	.0215	.05
Tar Acid Oil, 15%, drs gal.	.21	.22	.21	.22	.21	.22
25%, drs ....gal.	.23	.24	.23	.24	.23	.24
Tar, pine, delv, drs .....gal.	.25	.26	.25	.26	...	...
tks, delv ....gal.	...	.20	...	.20	...	...
Tartar Emetic, tech ......lb.	.22¾	.23	.22¾	.23	.23	.23
USP, bbls ....lb.	.28	.28½	.28	.28½	.27	.28½
Terpineol, den grd, drs ...lb.	.13¾	.14¾	.13¾	.14¾	...	...
tks ....lb.	.13	.14	.13	.14	...	...
Tetrachlorethane, 50 gal drs lb.	.08½	.09	.08½	.09	.08½	.09
Tetralene, 50 gal drs, wks lb.	.12	.13	.12	.13	.12	.13
Thiocarbanilid, 170 lb bbl lb.	,20	.25	.20	.25	.20	.25

‡ Bags 15c lower; § + 10.

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Tin, crystals, 500 lb bbls, wks ....lb.	.38	.38½	.38	.38½	.30	.40½
Metal, NY ....lb.	...	.508		.508	.50⅞	.55⅜
Oxide, 300 lb bbls, wks lb.	.56	.58	.56	.58	.55	.60
Tetrachloride, 100 lb drs, wks ....lb.	.25½	.26	.25½	.26	.25½	.28½
Titanium Dioxide, 300 lb bbls ....lb.	.17¼	.19¼	.17¼	.19¼	.17¼	.19¼
Barium Pigment, bbls ....lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
Calcium Pigment, bbls ....lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
Toluol, 110 gal drs, wks gal.	...	.35	...	.35	...	.35
8000 gal tks, frt allowed gal.	...	.30	...	.30	...	.30
Toluidine, mixed, 900 lb drs, wks ....lb.	.27	.28	.27	.28	.27	.28
Toner Lithol, red, bbls ....lb.	.75	.80	.75	.80	.75	.85
Para, red, bbls ....lb.	...	.75	...	.75	.75	.80
Toluidine, bgs ....lb.	...	1.35	...	1.35	...	1.35
Triacetin, 50 gal drs, wks lb.	.32	.36	.32	.36	.32	.36
Triamyl Borate, drs, wks lb.	...	.40	...	.40	...	.40
Triamylamine, drs, wks ...lb.	...	1.25	...	1.25	1.00	1.25
Trichlorethylene, 50 gal drs lb.	.09½	.10	.09½	.10	.09½	.10
Triethanolamine, 50 gal drs ....lb.	.35	.38	.35	.38	.35	.38
Tricresyl Phosphate, drs ..lb.	.21	.23	.21	.23	.19	.26
Triphenyl Guanidine ....lb.	.58	.60	.58	.60	.58	.60
Tripoli, airfloated, bgs, wks ....ton	27.50	30.00	27.50	30.00	...	...
Tungsten, Wolframite per unit	15.00	15.25	15.00	15.25	12.00	15.25
Turpentine (Spirits), c-l, NY dock, bbls ....gal.	...	.54	.49¾	.54¾	.46¼	.63½
Savannah, bbls ....gal.	...	.49¾	.45	.50¼	.41¼	.58½
Jacksonville, bbls ....gal.	...	.50¼	.45	.50¼	.41¼	.58½
Wood Steam dist, bbls, c-l, NY ....gal.	...	.45	...	.45	.41	.61
Urea, pure, 112 lb cases ..lb.	.15½	.17	.15½	.17	.15	.17
Fert grade, bgs c.i.f. ..ton	100.00	120.00	100.00	120.00	90.00	120.00
c.i.f. S.A. points ....ton	100.00	120.00	100.00	120.00	90.00	120.00
Urea Ammonia liq 55% NH_3, tks ....unit	...	.96	...	.96	...	.96
Valonia beard, 42%, tannin bgs ....ton	...	43.50	...	43.50	39.00	48.00
Cups, 32% tannin, bgs..ton	...	28.50	...	28.50	23.00	32.50
Mixture, bark, bgs ....ton	...	32.00	...	32.00	...	32.00
Vermillion, English, kgs ..lb.	1.56	1.70	1.56	1.70	1.41	1.73
Vinyl Chloride, 16 lb cyl ..lb.	...	1.00	...	1.00	...	1.00
Wattle Bark, bgs ....ton	...	32.00	...	32.00	29.50	34.00
Extract, 60°, tks, bbls ..lb.	...	.03¾	...	.03¾	.03⅝	.03⅞

WAXES

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Wax, Bayberry, bgs ....lb.	.22	.23	.22	.23	.25	.30
Bees, bleached, white 500 lb slabs, cases ....lb.	...	.33½	...	.33½	.32	.37
Yellow, African, bgs ..lb.	.21	.21½	.21	.22	.16	.22
Brazilian, bgs ....lb.	.22½	.24½	.22½	24½	...	...
Chilean, bgs ....lb.	.22½	.24½	.22½	24½	...	...
Refined, 500 lb slabs, cases ....lb.	.27½	.28	.27½	.28	.21	.29
Candelilla, bgs ....lb.	.10	.11	.10	.12½	.10¼	.14½
Carnauba, No. 1, yellow, bgs ....lb.	.35	.37	.35	.40	.30	.40
No. 2, yellow, bgs ....lb.	.34	.36	.34	.39	.34	.41
No. 2, N. C., bgs ....lb.	.26½	.27	.26½	.29	.20	.29
No. 3, Chalky, bgs ...lb.	.21½	.22	.21	.23½	...	...
No. 3, N. C., bgs ....lb.	.22½	.23	.22½	.25	.16¼	.25
Ceresin, white, imp, bgs lb.	.43	.45	.43	.45	...	...
Yellow, bgs ....lb.	.36	.38	.36	.38	...	...
Domestic, bgs ....lb.	.08	.11	.08	.11	...	...
Japan, 224 lb cases ....lb.	.06½	.06¾	.06	.06¾	.06	.07½
Montan, crude, bgs ....lb.	.10½	.11	.10½	.11	.10	.11
Paraffin, see Paraffin Wax.						
Spermaceti, blocks, cases lb.	.19	.20	.19	.20	.18	.20
Cakes, cases ....lb.	.20	.22	.20	.22	.19	.21
Whiting, 200 lb bgs, c-l, wks ....ton	...	12.00	...	12.00	...	...
Alba, bgs, c-l, NY ....ton	...	15.00	...	15.00	...	15.00
Gliders, bgs, c-l, NY ...ton	...	15.00	...	15.00	...	...
Wood Flour, c-l, bgs ....ton	18.00	30.00	18.00	30.00	18.00	30.00
Xylol, frt allowed, East 10° tks, wks ....gal.	.27	.29	.27	.29	.27	.29
Coml, tks, wks ....gal.	...	.26	...	.26	...	.26
Xylidine, mixed crude, drs lb.	.36	.37	.36	.37	.36	.37
Zinc, Carbonate tech, bbls, NY ....lb.	.09½	.11	.09½	.11	.09½	.11
Chloride fused, 600 lb drs, wks ....lb.	.04½	.05¾	.04½	.05¾	.04¼	.05¼
Gran, 500 lb bbls, wks ..lb.	.05	.05¾	.05	.05¾	.05⅛	.06
Soln 50%, tks, wks..100 lb.	...	2.00	...	2.00	...	2.00
Cyanide, 100 lb drs ....lb.	.36	.41	.36	.41	.36	.41
Zinc Dust, 500 lb bbls, c-l, delv ....lb.	...	.057	...	.057	.0567½	.071
Metal, high grade slabs, c-l, NY ....100 lb.	...	4.075	...	4.075	4.05	4.75
E. St. Louis ....100 lb.	.0370	.027	.027	.03725	3.70	4.46
Oxide, Amer, bgs, wks..lb.	.05¾	.06¼	.05¾	.06¼	.05¾	.06¼
French, 300 lb bbls, wks ....lb.	.06½	.10⅞	.06½	.10⅞	.05¾	.11⅛
Palmitate, bbls ....lb.	.21	.22	.21	.22	.20	.22
Perborate, 100 lb drs ...lb.	...	1.25	...	1.25	...	1.25
Peroxide, 100 lb drs ...lb.	...	1.25	...	1.25	...	1.25
Resinate, fused, dark, bbls ....lb.	.05¾	.06½	.05¾	.06½	.05¾	.06½
Stearate, 50 lb bbls ....lb.	.18	.21	.18	.21	.18	.21

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Zinc Sulfate, crys, 400 lb bbl, wks ....lb.	.028	.033	.028	.033	.02¾	.033
Flake, bbls ....lb.	.035	.032	.035	.032	...	...
Sulfide, 500 lb bbls, delv lb.	.10¾	.11¾	.10¾	.11¾	.10¾	.13½
bgs, delv ....lb.	.10½	.11½	.10½	.11½	...	...
Sulfocarbolate, 100 lb kgs ....lb.	.24	.25	.24	.25	.21	.25
Zirconium Oxide, Nat kgs lb.	.02½	.03	.02½	.03	.02½	.03
Pure, kgs ....lb.	.45	.50	.45	.50	.45	.50
Semi-refined, kgs ......lb.	.08	.10	.08	.10	.08	.10

Oils and Fats

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Castor, No. 3, 400 lb bbls..lb.	.09¾	.10½	.09¾	.10½	.09¾	.10½
Blown, 400 lb bbls .....lb.	.11½	.12¼	.11½	.12¼	.11½	.12¾
China Wood, bbls spot NY lb.	.097	.10	.094	.10	.07½	.099
Tks, spot NY ....lb.	...	.094	.088	.094	.07¼	.094
Coast, tks ....lb.	...	.093	.087	.093	.06⅞	.094
Coconut, edible, bbls NY..lb.	...	.09¾	.04	.09¾	.04¾	.10¾
Manila, bbls NY ......lb.	.05½	.05314	.04¾	.05¼	.03¾	.04¾
Tks, NY ....lb.	...	.04½	.03¾	.04½	.02⅝	.03¾
Tks, Pacific Coast ...lb.	...	.04⅜	.03½	.04⅜	.02¼	.02½
Cod, Newfoundland, 50 gal bbls ....gal.	.36	.38	.36	.38	.34	.40
Copra, bgs, NY ....lb.	.02¾	.028	.02	.028	.012	.021
Corn, crude, bbls, NY ....lb.	...	.11⅛	.10½	.11⅛	.04⅝	.10½
Tks, mills ....lb.	...	.10⅛	.09½	.10⅛	.03½	.09½
Refd, 375 lb bbls, NY ..lb.	...	.12⅛	.12	.12⅛	.05¾	.12
Cottonseed, see Oils and Fats News Section.						
Degras, American, 50 gal bbls, NY ....lb.	.04¾	.05½	.04½	.05½	.02¾	.05½
English, brown, bbls, NY lb.	.05½	.06½	.05¼	.06½	.03¾	.05⅜
Greases, Yellow ....lb.	.05⅜	.05½	.05	.05½	.02⅜	.05⅛
White, choice bbls, NY lb.	.05⅜	.05⅝	.05¼	.05⅝	.02¾	.05⅝
Herring, Coast, tks ......gal.	.28	Nom.	.23	Nom.	.15	.23
Lard Oil, edible, prime ...lb.	...	.09¾	...	.09¾	...	.09¾
Extra, bbls ....lb.	...	.09¼	.08½	.09¼	.07	.08½
Extra, No. 1, bbls ......lb.	...	.09	.08¼	.09	.06⅜	.08¼
Linseed, Raw, less than 5 bbl lots ....lb.	...	.099	.095	.099	.095	.105
bbls, c-l spot ....lb.	...	.091	.087	.091	.087	.101
Tks ....lb.	...	.085	.081	.085	.081	.095
Menhaden, tks, Baltimore gal.	...	.25		.25	.15	.25
Refined, alkali, drs ....lb.	...	.066	.061	.066	.052	.069
Tks ....lb.	...	.06	.055	.06	.046	.061
Light pressed, drs ......lb.	...	.06	.055	.06	.046	.057
Tks ....lb.	...	.054	.049	.054	.04	.05
Neatsfoot, CT, 20° bbls, NY ....lb.	...	.16½	...	.16½	...	.16½
Extra, bbls, NY ....lb.	...	.09½	.08½	.09½	.07	.08½
Pure, bbls, NY ....lb.	...	.12	...	.12	.12	.13
Oleo, No. 1, bbls, NY ....lb.	...	.11½	.10¾	.11½	.06	.11½
No. 2, bbls, NY ....lb.	...	.11	.10	.11	.05⅜	.11¼
Olive, denat, bbls, NY ...gal.	.93	.95	.84	.95	.76	.90
Edible, bbls, NY ......gal.	1.65	1.75	1.55	1.75	1.55	1.90
Foots, bbls, NY ....lb.	...	.08	.07⅛	.08	.06½	.07½
Palm, Kernel, casks ......lb.	.04½	Nom.	.03	.04½	.02½	.04¼
Niger, cks ....lb.	...	.04¾	.034	.04¾	.031	.03¾
Peanut, crude, bbls, NY ..lb.	...	.10½	.10½	.10¾	.06½	.10¾
Refined, bbls, NY ......lb.	...	.13	.12½	.13	.07½	.12½
Perilla, drs, NY ....lb.	...	.08⅝	.08⅝	.08¾	.08¼	.09⅝
Tks, Coast ....lb.	.08¼	Nom.	.08¼	Nom.	.07½	.09
Pine, see Pine Oil, Chemical Section.						
Rapeseed, blown, bbls, NY lb.	.08	.082	.08	.082	.08	.082
Denatured, drs. NY ...gal.	.47	.48	.40	.48	.37	.44
Red, Distilled, bbls ......lb.	.07⅜	.08⅜	.07⅜	.08⅜	.06⅞	.08⅜
Tks ....lb.	...	.07	.06½	.07	.06	.06½
Salmon, Coast, 8000 gal tks ....gal.	.28	Nom.	.25	.28	.15	.21
Sardine, Pac Coast, tks ..gal.	.29	.30	.24½	.30	.13	.25
Refined alkali, drs ......lb.	...	.066	.065	.066	...	...
Tks ....lb.	...	.06	.06	.061	...	...
Light pressed, drs ......lb.	...	.06	.055	.06	...	...
Tks ....lb.	...	.054	.049	.054	...	...
Sesame, yellow, dom .....lb.	.13	.13¼	.12¼	.13¼	.07½	.13¼
White, dos ....lb,	.13	.13¼	.12¾	.13¼	.08	.13¼
Soy Bean, crude Pacific Coast ....lb.	...	Nom.	...	Nom.	...	Nom.
Dom, tks, f.o.b. mills ..lb.	...	.087	.08	.087	.06	.08
Crude, drs, NY ......lb.	.093	.097	.086	.097	.066	.09
Refd, bbls, NY ....lb.	.093	.104	.091	.104	.071	.102
Tks ....lb.	.092	.094	.08	.094	...	...
Sperm, 38° CT, bleached, bbls NY ....lb.	.099	.101	.099	.101	.106	.11
45° CT, bleached, bbls, NY ....lb.	.092	.094	.092	.094	.099	.103
Stearic Acid, double pressed dist bgs ....lb.	.10	.11	.10	.11	.09	.11
Double pressed saponified bags ....lb.	.09	.10	.09	.10	.09	.10
Triple pressed dist bgs ..lb.	.12¾	.13¾	.12¾	.13¾	.11¾	.13¾
Stearine, Oleo, bbls ......lb.	...	.10½	.09¼	.10½	.05	.10⅝
Tallow City, extra loose ..lb.	...	.05¾*		.05⅜	.02⅞	.05⅜
Edible, tierces ....lb.	...	.07½	.07¼	.07½	.04¾	.07¼
Tallow Oil, bbls, c-l, NY lb.	.05¾	.06	.05¾	.06	.05¾	.06
Acidless, tks, NY ..... lb.	...	.08¼	.07½	.08¼	.06	.07½
Vegetable, Coast mats ..lb.	.07¼	Nom.	.07¼	Nom.	.06	.07¼
Turkey Red, single, bbls ..lb.	.07½	...	.07½	...	.07½	...
Double, bbls ....lb.	.12½	.13	.12½	.13	.12½	.13
Whale, crude, coast, tks ..lb.	...	.04	...	.04	...	...
Winter bleach, bbls, NY lb.	.07	.08	.07	.08	...	.072
Refined, nat, bbls, NY ..lb.	.064	.066	.064	.066	.064	.07

* New crop shipment tanks .075.

THE CHEMICAL MARKET-PLACE

Local Suppliers

A selected Directory of responsible manufacture-sales agents, and jobbers who maintain spot stocks of chemicals, dye and tanstuffs, gums, naval stores, paint and fertilizer materials and similar products.

Let us tell you about our combination contract for space on this page and in our Chemical Guide-Book.

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"We"—Editorially Speaking

And now how many little boys in the Memory Class can recall the stirring words of Mr. Roosevelt when, at Pittsburgh on Oct. 9, 1932, he castigated the wild spendings of Mr. Hoover:

"That, my friends, represents an increase in actual administrative spending in four years of approximately one billion dollars, or roughly fifty per cent.; and that, I may add, is the most reckless and extravagant pace I have been able to discover in the statistical record of any peace-time government any where any time."

❖❖❖❖

The results of our own questionnaire on NRA, showing that virtually 9 out of 10 business men would change or abolish the code system (see News Section in this issue), coupled with the Administration's intent to continue NRA (see any newspaper) are signs that portend that we are destined, and that shortly, to become a nation of economic bootleggers.

❖❖❖❖

Since Sears-Roebuck and Montgomery-Ward have both become recognized distributors of alkali, Woolworth's and A. & P. have been considering carefully the possibilities of extending their trade in this direction. So far these plans have been held up, according to reliable trade factors, by the inability to wrap liquid caustic in cellophane; but we are informed that several resourceful alkali salesmen are working on this problem and who can doubt but that chemistry will shortly triumph again.

❖❖❖❖

The announcement that Southern Alkali intends to dress its sales forces in Mexican sombrerros and big silver spurs was premature. The clever advertising stunt was severely frowned upon by the entire industry which feared that this picturesque and appropriate costume might furnish the excuse for Southern salesmen openly to carry a gun. A competitor threatened to retaliate by costuming its salesmen in burglars' masks and arming them with a blackjack and safe-cracking kit, so the matter was dropped. It's a pity for this idea of appropriate trade uniforms is full of possibilities.

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The second of the series of Mr. Bechtel's articles on "Budget Control" appears in this issue, and the final instalment will appear in the March number. Comments on this have been most praiseworthy and we plan to reprint the complete series, copies of which will be available, after publication in March, at a small cost.

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Our subscription manager is getting quite chesty, just informing us that they have beaten last January's net gain which was in itself a record.

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Looking through the 1920 volume of Drug & Chemical Markets in search of material for our "Fifteen Years Ago" we read that the Butterworth-Judson Corporation has leased the aniline oil plant of Federal Dyestuffs, at Kingsport, Tenn., and that the Union Dye & Chemical has suspended operations—and these are not all of the names that were prominent in '20 that the newcomers in the chemical field have never heard of.

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Did you know—

That Michigan Alkali runs a radio station, W.C.V., and if you tune in you'll be disappointed not to hear any jazz music from the Yellow Hoop Band, nor yet the war songs of the Wyandotte Indians; only dots and dashes communicating with the freight steamers on the Great Lakes?

Fifteen Years Ago

From our issues of February, 1920

Experimental paper mill of Arthur D. Little, Inc., Cambridge, Mass., busy on demonstrations of the paper-making quality of linters and cotton hull fibers.

Fire follows explosion of chemical tanks at plant of Naugatuck Chemical Co., Naugatuck, Conn., with estimated loss of $100,000.

James T. Pardee, vice-president, Dow Chemical, at hearings before the Senate Finance Committee, explains how the German Bromine Trust endeavored to ruin his corporation.

Drug and Chemical Club formed in St. Louis, with $2,000 pledged to publicity campaign to draw attention to city as a distributing point.

National Aniline reduced Board of Directors from sixteen to twelve; Orlando F. Weber being elected president.

Hercules Powder receipts decline from $45,556,052 in 1918, to $20,539,736 in December, 1919.

Two million dollar plant is to be added to industrial group at Curtis Bay, Md., made up of United States Industrial Alcohol, United States Chemical, and Curtis Bay Copper & Iron Co. New company will be known as the Sterno Corp.

Chemical Drama

Next month we start the first of series of fifteen articles on the lives of fifteen of the great pioneers of the chemical industry, such men as Nichols, Grasselli, Kalbfleisch, Warner, Haslacher,—the rugged individualists whose names even are now vanishing in the merger of their companies into the modern corporations, but whose battles still determine much of chemical policy and whose labors built the foundations on which we stand.

There was vivid drama packed into their strenuous lives. These articles will make them live again.

In the March number read the story of E. C. Klipstein and learn how a mis-sent pair of spectacles turned a country school teacher into one of the master scouts of new chemical processes.

Our banker friends tell us that no nation, even in the midst of the wildest inflation, has been depraved enough to commandeer the gold in its banks which have been earmarked for the account of a foreign country, and according to Lester Bacharach, the government has nothing on the alcohol companies, none of which have as yet offered a cash discount on the tax.

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Charlie Thompson, chemical distributor, of Kansas City and other points west, southwest and northwest, first went to work for sixty dollars a month, and started in business on his own account with an accumulated capital of $1,785. We learned all this from the Kansas City papers in which this enterprising individualist was recently held up as one of that city's shining examples of "hard road to success."

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From the NFA weekly news release we learn that George Lomakin, Tashkent, Russia, was executed for using too much fertilizer and for failing to weed a cotton crop. Sabotage was the charge, but, of course, this was in Soviet Russia.

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American Code for Everybody

WORK

60 seconds per minute
60 minutes per hour
6 days per week
$6.00 per day minimum
$60,000 per year maximum
$600,000 per lifetime accumulation

A Code for each industry cannot work.